NEW CURRICULA

Curriculum standards

Advanced Training in Immunology and Allergy

March 2025

RACP
Specialists. Together

About this document

The new Advanced Training in Immunology and Allergy curriculum consists of curriculum standards and learning, teaching, and assessment (LTA) programs.

This document outlines the curriculum standards for Advanced Training in Immunology and Allergy for trainees and supervisors. The curriculum standards should be used in conjunction with the Advanced Training in Immunology and Allergy LTA program.

The new curriculum was approved by the College Education Committee in March 2025. Please refer to the College website for details on its implementation.

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Program overview

Purpose of Advanced Training

The RACP offers Advanced Training in 33 diverse medical specialties as part of Division, Chapter, or Faculty training programs.

The purpose of Advanced Training is to develop a workforce of physicians who:

- have received breadth and depth of focused specialist training, and experience with a wide variety of health problems and contexts
- are prepared for and committed to independent expert practice, lifelong learning, and continuous improvement
- provide safe, quality health care that meets the needs of the communities of Australia and Aotearoa New Zealand.

Specialty overview

An immunologist specialises in the diagnosis and management of various conditions related to immune function, such as autoimmune diseases, immunodeficiency disorders, and allergies. Additionally, they may engage in research to further understand immune responses and develop better treatments for immune-related disorders.

Immunologists focus on accurate diagnoses, personalised treatment, and patient education. Care is provided in hospitals and private practices, catering to patients with autoimmune diseases, immunodeficiency disorders, and allergies, and those needing immunotherapy. Immunologists provide:

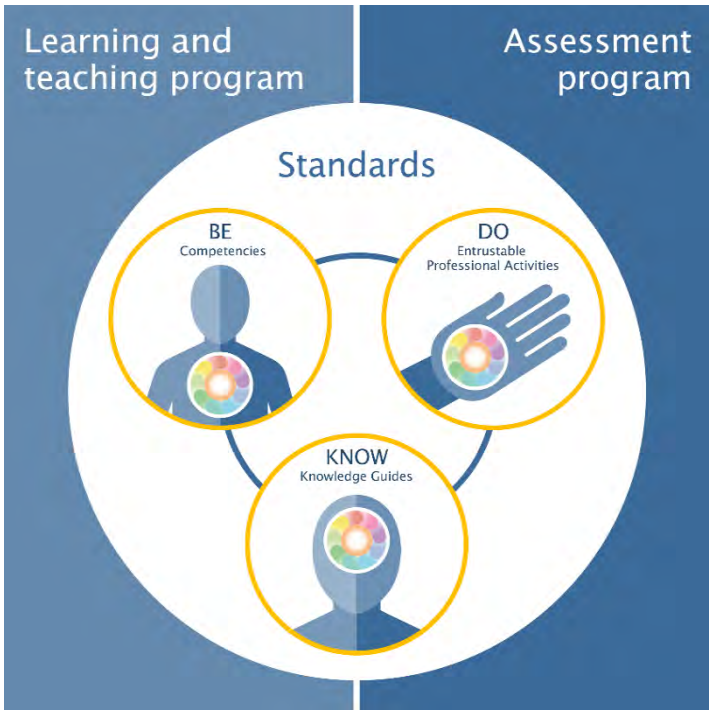
- **diagnostic expertise.** Immunologists provide specialised diagnostic reasoning and testing, enabling accurate diagnoses of immune-related disorders and allergic conditions.
- **tailored treatment approaches.** Immunologists produce personalised treatment plans, incorporating medications, immunotherapy, and lifestyle modifications to suit patients' unique needs and conditions.
- **management of complex conditions.** These conditions may be multisystem, uncommon, varied, or undifferentiated, and immunologists often collaborate with other specialists for comprehensive care.
- **holistic patient care.** Beyond treatment, immunologists provide education and support, empowering patients to manage their conditions effectively and enhance their quality of life.

Professionals in immunology require a combination of technical expertise, including accurate diagnostic skills and treatment proficiency, as well as effective communication abilities to educate and empower patients in managing their conditions, all within the context of a constantly evolving understanding of immune system function and disease processes.

Becoming a specialist in immunology or allergy requires a range of professional skills, including:

- **clinical diagnosis.** Immunologists must have the ability to accurately diagnose immune-related disorders and allergic conditions through comprehensive patient evaluations and specialised diagnostic tests.
- **medical knowledge.** An in-depth understanding of immunology, allergies, and related fields, including knowledge of immune system function, disease pathology, treatment modalities, and emerging research, is essential.
- **patient care.** Specialists in immunology display strong patient communication skills, empathy, and the ability to establish rapport with patients, providing compassionate and supportive care throughout diagnosis, treatment, and management.
- **critical thinking.** Immunologists require analytical skills to assess complex medical cases, interpret diagnostic results, and formulate effective treatment plans tailored to individual patients' needs.
- **technical proficiency.** Immunologists must be proficient in performing and interpreting specialised diagnostic tests, such as skin prick tests, patch tests, blood tests, and immunological assays.
- **interdisciplinary collaboration.** Specialists in immunology have the ability to collaborate effectively with other healthcare professionals, including primary care physicians, specialists, nurses, and allied health professionals, to ensure comprehensive patient care.
- **research skills.** Immunologists are proficient in research methodologies, critical appraisal of scientific literature, and participation in clinical research projects to advance knowledge and innovation in the field.
- **continuing education.** Specialists in the field are committed to lifelong learning and professional development, and stay updated on advancements in immunology, allergy, and healthcare practices through participation in conferences, workshops, and continuing education programs.
- **ethical practice.** Immunologists adhere to ethical principles and professional standards in patient care, research conduct, and interaction with colleagues and patients.
- **leadership and advocacy.** Specialists in immunology display leadership skills to advocate for patients' needs, promote public health initiatives, and contribute to professional organisations and community outreach efforts related to immunology and allergy.
- **driving research and innovation**. Immersed in innovative research, immunologists contribute to the advancement of diagnostic techniques, therapeutic interventions, and understanding of immune-related disorders and allergies, ensuring continuous improvement in patient care.

Advanced Training curricula standards



The **RACP curriculum model** is made up of curricula standards supported by learning, teaching, and assessment programs.

Learning and teaching programs outline the strategies and methods to learn and teach curricula standards, including required and recommended learning activities.

Assessment programs outline the planned use of assessment methods to provide an overall picture of the trainee's competence over time.

The **curricula standards** outline the educational objectives of the training program and the standard against which trainees' abilities are measured.

- **Competencies** outline the expected professional behaviours, values, and practices of trainees in 10 domains of professional practice.

- **Entrustable Professional Activities** (EPAs) outline the essential work tasks trainees need to be able to perform in the workplace.

- **Knowledge guides** outline the expected baseline knowledge of trainees.

Professional Practice Framework

The Professional Practice Framework describes 10 domains of practice for all physicians.

Learning, teaching, and assessment structure

The learning, teaching, and assessment structure defines the framework for delivery.

Advanced Training learning, teaching, and assessment structure

- An **entry decision** is made before entry into the program.
- **Progress decisions**, based on competence, are made at the end of the specialty foundation and specialty consolidation phases of training.
- A **completion decision**, based on competence, is made at the end of the training program, resulting in eligibility for admission to Fellowship.

Advanced Training is a **hybrid time- and competency-based training program**. There is a minimum time requirement of between three to five years' full-time equivalent experience, depending on the training program undertaken. Progress and completion decisions are based on evidence of trainees' competence.

Curriculum standards

Competencies

Competencies outline the expected professional behaviours, values and practices that trainees need to achieve by the end of training.

Competencies are grouped by the 10 domains of the professional practice framework.

Competencies will be common across training programs.

Medical expertise

Professional standard: Physicians apply knowledge and skills informed by best available current evidence in the delivery of high-quality, safe practice to facilitate agreed health outcomes for individual patients and populations.

Knowledge: Apply knowledge of the scientific basis of health and disease to the diagnosis and management of patients.

Synthesis: Gather relevant data via age- and context-appropriate means to develop reasonable differential diagnoses, recognising and considering interactions and impacts of comorbidities.

Diagnosis and management: Develop diagnostic and management plans that integrate an understanding of individual patient circumstances, including psychosocial factors and specific vulnerabilities, epidemiology, and population health factors in partnership with patients, families, whānau, or carers[1], and in collaboration with the healthcare team.

[1] References to patients in the remainder of this document may include their families, whānau, and/or carers.

Communication

Professional standard: Physicians collate information, and share this information clearly, accurately, respectfully, responsibly, empathetically, and in a manner that is understandable.

Physicians share information responsibly with patients, families, carers, colleagues, community groups, the public, and other stakeholders to facilitate optimal health outcomes.

Effective communication: Use a range of effective and appropriate verbal, nonverbal, written and other communication techniques, including active listening.

Communication with patients, families, and carers: Use collaborative, effective, and empathetic communication with patients, families, and carers.

Communication with professionals and professional bodies: Use collaborative, respectful, and empathetic clinical communication with colleagues, other health professionals, professional bodies, and agencies.

Written communication: Document and share information about patients to optimise patient care and safety.

Privacy and confidentiality: Maintain appropriate privacy and confidentiality, and share information responsibly.

Quality and safety

Professional standard: Physicians practice in a safe, high-quality manner within the limits of their expertise.

Physicians regularly review and evaluate their own practice alongside peers and best practice standards, and conduct continuous improvement activities.

Patient safety: Demonstrate a safety focus and continuous improvement approach to own practice and health systems.

Harm prevention and management: Identify and report risks, adverse events, and errors to improve healthcare systems.

Quality improvement: Participate in quality improvement activities to improve quality of care and safety of the work environment.

Patient engagement: Enable patients to contribute to the safety of their care.

Teaching and learning

Professional standard: Physicians demonstrate a lifelong commitment to excellence in practice through continuous learning and evaluating evidence.

Physicians foster the learning of others in their profession through a commitment to mentoring, supervising, and teaching.[2]

Lifelong learning: Undertake effective self-education and continuing professional development.

Self-evaluation: Evaluate and reflect on gaps in own knowledge and skills to inform self-directed learning.

Supervision: Provide supervision for junior colleagues and/or team members.

Teaching: Apply appropriate educational techniques to facilitate the learning of colleagues and other health professionals.

Patient education: Apply appropriate educational techniques to promote understanding of health and disease amongst patients and populations.

Research

Professional standard: Physicians support creation, dissemination and translation of knowledge and practices applicable to health.[2]

They do this by engaging with and critically appraising research, and applying it in policy and practice to improve the health outcomes of patients and populations.

Evidence-based practice: Critically analyse relevant literature and refer to evidence-based clinical guidelines, and apply these in daily practice.

Research: Apply research methodology to add to the body of medical knowledge and improve practice and health outcomes.

[2] Adapted from Richardson D, Oswald A, Chan M-K, Lang ES, Harvey BJ. Scholar. In: Frank JR, Snell L, Sherbino J, editors. The Draft CanMEDS 2015 Physician Competency Framework – Series IV. Ottawa: The Royal College of Physicians and Surgeons of Canada; 2015 March.

Cultural safety

Professional standard: Physicians engage in iterative and critical self-reflection of their own cultural identity, power, biases, prejudices and practising behaviours. Together with the requirement of understanding the cultural rights of the community they serve; this brings awareness and accountability for the impact of the physician's own culture on decision-making and healthcare delivery. It also allows for an adaptive practice where power is shared between patients, family, whānau and/or community and the physician, to improve health outcomes.

Physicians recognise the patient and population's rights for culturally-safe care, including being an ally for patient, family, whānau and/or community autonomy and agency over their decision-making. This shift in the physician's perspective fosters collaborative and engaged therapeutic relationships, allows for strength-based (or mana-enhanced) decisions, and sharing of power with the recipient of the care, optimising health care outcomes.

Physicians critically analyse their environment to understand how colonialism, systemic racism, social determinants of health and other sources of inequity have and continue to underpin the healthcare context. Consequently, physicians then can recognise their interfacing with, and contribution to, the environment in which they work to advocate for safe, more equitable and decolonised services and create an inclusive and safe workplace for all colleagues and team members of all cultural backgrounds.[3]

Critical reflection. Engage in iterative and critical self-reflection and demonstrate cultural safety in the context of their own cultural identity, power, biases, prejudices and practising behaviours.

Allyship. Recognise the patient and population's rights to culturally-safe care, including being an ally for patient, family, whānau and/or community autonomy and agency over their decision-making.

Inclusive communication. Apply culturally-safe communication, acknowledging the sharing of power, and cultural and human rights to enable patients, families and whānau to engage in appropriate patient care decisions.

Culturally-safe environment. Contributes to a culturally-safe learning and practice environment for patients and team members. Respect patients may feel unsafe in the healthcare environment.

[3] The RACP has adopted the Medical Council of New Zealand's definition of cultural safety (below):
Cultural safety can be defined as[1].

- The need for doctors to examine themselves and the potential impact of their own culture on clinical interactions and healthcare service delivery.
- The commitment by individual doctors to acknowledge and address any of their own biases, attitudes, assumptions, stereotypes, prejudices, structures, and characteristics that may affect the quality of care provided.
- The awareness that cultural safety encompasses a critical consciousness where healthcare professionals and healthcare organisations engage in ongoing self-reflection and self-awareness and hold themselves accountable for providing culturally safe care, as defined by the patient and their communities.

1. Curtis et al. "Why cultural safety rather than cultural competency is required to achieve health equity". International Journal for Equity in Health (2019) 18:174

Ethics and professional behaviour

Professional standard: Physicians' practice is founded upon ethics, and physicians always treat patients, their families, communities, and populations in a caring and respectful manner.

Physicians demonstrate their commitment and accountability to the health and wellbeing of individual patients, communities, populations, and society through ethical practice.

Physicians demonstrate high standards of personal behaviour.

Beliefs and attitudes: Reflect critically on personal beliefs and attitudes, including how these may impact on patient care.

Honesty and openness: Act honestly, including reporting accurately, and acknowledging their own errors.

Patient welfare: Prioritise patients' welfare and community benefit above self-interest.

Accountability: Be personally and socially accountable.

Personal limits: Practise within their own limits and according to ethical principles and professional guidelines.

Self-care: Implement strategies to maintain personal health and wellbeing.

Respect for peers: Recognise and respect the personal and professional integrity, roles, and contribution of peers.

Interaction with professionals: Interact equitably, collaboratively, and respectfully with other health professionals.

Respect and sensitivity: Respect patients, maintain appropriate relationships, and behave equitably.

Privacy and confidentiality: Protect and uphold patients' rights to privacy and confidentiality.

Compassion and empathy: Demonstrate a caring attitude towards patients, and endeavour to understand patients' values and beliefs.

Health needs: Understand and address patients', families', carers', and colleagues' physical and emotional health needs.

Medical and health ethics and law: Practise according to current community and professional ethical standards and legal requirements.

Judgement and decision making

Professional standard: Physicians collect and interpret information, and evaluate and synthesise evidence, to make the best possible decisions in their practice.

Physicians negotiate, implement, and review their decisions and recommendations with patients, their families and carers, and other health professionals.

Diagnostic reasoning: Apply sound diagnostic reasoning to clinical problems to make logical and safe clinical decisions.

Resource allocation: Apply judicious and cost-effective use of health resources to their practice.

Task delegation: Apply good judgement and decision making to the delegation of tasks.

Limits of practice: Recognise their own scope of practice and consult others when required.

Shared decision making: Contribute effectively to team-based decision-making processes.

Leadership, management, and teamwork

Professional standard: Physicians recognise, respect, and aim to develop the skills of others, and engage collaboratively to achieve optimal outcomes for patients and populations.

Physicians contribute to and make decisions about policy, protocols, and resource allocation at personal, professional, organisational, and societal levels.

Physicians work effectively in diverse multidisciplinary teams and promote a safe, productive, and respectful work environment that is free from discrimination, bullying, and harassment.

Managing others: Lead teams, including setting directions, resolving conflicts, and managing individuals.

Wellbeing: Consider and work to ensure the health and safety of colleagues and other health professionals.

Leadership: Act as a role model and leader in professional practice.

Teamwork: Negotiate responsibilities within the healthcare team and function as an effective team member.

Health policy, systems, and advocacy

Professional standard: Physicians apply their knowledge of the nature and attributes of local, national, and global health systems to their own practices. They identify, evaluate, and influence health determinants through local, national, and international policy.

Physicians deliver and advocate for the best health outcomes for all patients and populations.

Health needs: Respond to the health needs of the local community and the broader health needs of the people of Australia and Aotearoa New Zealand.

Prevention and promotion: Incorporate disease prevention, health promotion, and health surveillance into interactions with individual patients and their social support networks.

Equity and access: Work with patients and social support networks to address determinants of health that affect them and their access to needed health services or resources.

Stakeholder engagement: Involve communities and patient groups in decisions that affect them to identify priority problems and solutions.

Advocacy: Advocate for prevention, promotion, equity, and access to support patient and population health needs within and outside the clinical environment.

Resource allocation: Understand the factors influencing resource allocation, promote efficiencies, and advocate to reduce inequities.

Sustainability: Manage the use of healthcare resources responsibly in everyday practice.

Entrustable Professional Activities

Entrustable Professional Activities (EPAs) outline the essential work tasks trainees need to be able to perform in the workplace.

#	Theme	Title
1	Team leadership	Lead a team of health professionals
2	Supervision and teaching	Supervise and teach professional colleagues
3	Quality improvement	Identify and address failures in health care delivery
4	Clinical reasoning in diagnosis and management	Clinically assess and manage the ongoing care of patients
5	Management of transitions in care	Manage the transition of patient care between paediatric and adult immunology services, between other specialties, and between other health services
6	Acute care	Manage the early care of acutely unwell patients
7	Longitudinal care	Manage and coordinate the longitudinal care of patients with chronic illness, disability, and/or long-term health issues, and patients at the end of their lives
8	Communication with patients	Discuss diagnoses and management plans with patients
9	Prescribing	Prescribe therapies tailored to patients' needs and conditions
10	Investigations and procedures	Select, organise, and interpret investigations, and plan, prepare for, perform, and provide aftercare for important practical procedures
11	Clinic management	Manage an outpatient clinic

EPA 1: Team leadership

Theme	Team leadership	AT-EPA-01
Title	**Lead a team of health professionals**	
Description	This activity requires the ability to: • prioritise workload • manage multiple concurrent tasks • articulate individual responsibilities, expertise, and accountability of team members • understand the range of team members' skills, expertise, and roles • acquire and apply leadership techniques in daily practice • collaborate with and motivate team members • encourage and adopt insights from team members • act as a role model.	
Behaviours		
Professional practice framework domain	**Ready to perform without supervision** Expected behaviours of a trainee who can routinely perform this activity without needing supervision The trainee will:	**Requires some supervision** Possible behaviours of a trainee who needs some supervision to perform this activity The trainee may:
Medical expertise	• synthesise information with other disciplines to develop optimal, goal-centred plans for patients[4] • use evidence-based care to meet the needs of patients or populations • assess and effectively manage clinical risk in various scenarios • demonstrate clinical competence and skills by effectively supporting team members	• demonstrate adequate knowledge of healthcare issues by interpreting complex information • assess the spectrum of problems to be addressed • apply medical knowledge to assess the impact and clinical outcomes of management decisions • provide coordinated and quality health care for populations or patients as a member of a multidisciplinary team
Communication	• provide support and motivate patients or populations and health professionals by effective communication • demonstrate a transparent, consultative style by engaging patients, families, carers, relevant professionals and/or the public in shared decision making • demonstrate rapport with people at all levels by tailoring messages to different stakeholders	• communicate adequately with colleagues • communicate adequately with patients, families, carers, and/or the public • respect the roles of team members

[5] References to patients in the remainder of this document may include their families, whānau, and/or carers.

	• work with patients, families, carers, and other health professionals / community services to resolve conflict that may arise when planning and aligning goals	
Quality and safety	• identify opportunities to improve care by participating in surveillance and monitoring of adverse events and 'near misses' • identify activities within systems to reduce errors, improve patient and population safety, and implement cost-effective change • place safety and quality of care first in all decision making	• participate in audits and other activities that affect the quality and safety of patients' care • participate in interdisciplinary collaboration to provide effective health services and operational change • use information resources and electronic medical record technology where available
Teaching and learning	• regularly self-evaluate personal professional practice, and implement changes based on the results • actively seek feedback from supervisors and colleagues on their own performance • identify personal gaps in skills and knowledge, and engage in self-directed learning • maintain current knowledge of new technologies, health care priorities, and changes of patients' expectations • teach competently by imparting professional knowledge • manage and monitor learner progress, providing regular assessment and feedback	• accept feedback constructively, and change behaviour in response • recognise the limits of personal expertise, and involve other health professionals as needed • demonstrate basic skills in facilitating colleagues' learning
Cultural safety	• demonstrate culturally competent relationships with professional colleagues and patients • demonstrate respect for diversity and difference • take steps to minimise unconscious bias, including the impact of gender, religion, cultural beliefs, and socioeconomic background on decision making	• demonstrate awareness of cultural diversity and unconscious bias • work effectively and respectfully with people from different cultural backgrounds
Ethics and professional behaviour	• promote a team culture of shared accountability for decisions and outcomes • encourage open discussion of ethical and clinical concerns • respect differences of multidisciplinary team members • understand the ethics of resource allocation by aligning optimal patients and organisational care	• support ethical principles in clinical decision making • maintain standards of medical practice by recognising the health interests of patients or populations as primary responsibilities • respect the roles and expertise of other health professionals • work effectively as a member of a team

	• effectively consult with stakeholders, achieving a balance of alternative views • acknowledge personal conflicts of interest and unconscious bias • act collaboratively to resolve behavioural incidents and conflicts such as harassment and bullying	• promote team values of honesty, discipline, and commitment to continuous improvement • demonstrate understanding of the negative impact of workplace conflict
Judgement and decision making	• evaluate health services and clarify expectations to support systematic, transparent decision making • make decisions when faced with multiple and conflicting perspectives • ensure medical input to organisational decision making • adopt a systematic approach to analysing information from a variety of specialties to make decisions that benefit health care delivery	• monitor services and provide appropriate advice • review new health care interventions and resources • interpret appropriate data and evidence for decision making
Leadership, management, and teamwork	• combine team members' skills and expertise in delivering patient care and/or population advice • develop and lead effective multidisciplinary teams by developing and implementing strategies to motivate others • build effective relationships with multidisciplinary team members to achieve optimal outcomes • ensure all members of the team are accountable for their individual practice	• understand the range of personal and other team members' skills, expertise, and roles • acknowledge and respect the contribution of all health professionals involved in patients' care • participate effectively and appropriately in multidisciplinary teams • seek out and respect the perspectives of multidisciplinary team members when making decisions
Health policy, systems, and advocacy	• engage in appropriate consultation with stakeholders on the delivery of health care • advocate for the resources and support for healthcare teams to achieve organisational priorities • influence the development of organisational policies and procedures to optimise health outcomes • identify the determinants of health of the population, and mitigate barriers to access to care • remove self-interest from solutions to health advocacy issues	• communicate with stakeholders within the organisation about health care delivery • demonstrate understanding of the methods used to allocate resources to provide high-quality care • promote the development and use of organisational policies and procedures

EPA 2: Supervision and teaching

Theme	Supervision and teaching	AT-EPA-02
Title	**Supervise and teach professional colleagues**	
Description	This activity requires the ability to: • provide work-based teaching in a variety of settings • teach professional skills • create a safe and supportive learning environment • plan, deliver, and provide work-based assessments • encourage learners to be self-directed and identify learning experiences • supervise learners in day-to-day work, and provide feedback • support learners to prepare for assessments.	
Behaviours		
Professional practice framework domain	**Ready to perform without supervision** Expected behaviours of a trainee who can routinely perform this activity without needing supervision The trainee will:	**Requires some supervision** Possible behaviours of a trainee who needs some supervision to perform this activity The trainee may:
Medical expertise	• combine high-quality care with high-quality teaching • explain the rationale underpinning a structured approach to decision making • consider the patient-centric view during consultations • consider the population health effect when giving advice • encourage learners to consider the rationale and appropriateness of investigation and management options	• teach learners using basic knowledge and skills
Communication	• establish rapport and demonstrate respect for junior colleagues, medical students, and other health professionals • communicate effectively when teaching, assessing, and appraising learners • actively encourage a collaborative and safe learning environment with learners and other health professionals • encourage learners to tailor communication as appropriate for different patients[5], such as younger or older people, and different populations	• demonstrate accessible, supportive, and compassionate behaviour

[6] References to patients in the remainder of this document may include their families, whānau, and/or carers.

	• support learners to deliver clear, concise, and relevant information in both verbal and written communication • listen and convey information clearly and considerately	
Quality and safety	• support learners to deliver quality care while maintaining their own wellbeing • apply lessons learnt about patient safety by identifying and discussing risks with learners • assess learners' competence, and provide timely feedback to minimise risks to care • maintain the safety of patients and organisations involved with education, and appropriately identify and action concerns	• observe learners to reduce risks and improve health outcomes
Teaching and learning	• demonstrate knowledge of the principles, processes, and skills of supervision • provide direct guidance to learners in day-to-day work • work with learners to identify professional development and learning opportunities based on their individual learning needs • offer feedback and role modelling • participate in teaching and supervision professional development activities • encourage self-directed learning and assessment • develop a consistent and fair approach to assessing learners • tailor feedback and assessments to learners' goals • seek feedback and reflect on own teaching by developing goals and strategies to improve • establish and maintain effective mentoring through open dialogue • support learners to identify and attend formal and informal learning opportunities • recognise the limits of personal expertise, and involve others appropriately	• demonstrate basic skills in the supervision of learners • apply a standardised approach to teaching, assessment, and feedback without considering individual learners' needs • implement teaching and learning activities that are misaligned to learning goals • adopt a teaching style that discourages learner self-directedness
Research	• clarify junior colleagues' research project goals and requirements, and provide feedback regarding the merits or challenges of proposed research	• guide learners with respect to the choice of research projects • ensure that the research projects planned are feasible and of suitable standards

	• monitor the progress of learners' research projects regularly, and may review research projects prior to submission • support learners to find forums to present research projects • encourage and guide learners to seek out relevant research to support practice	
Cultural safety	• role model a culturally appropriate approach to teaching • encourage learners to seek out opportunities to develop and improve their own cultural safety • encourage learners to consider culturally appropriate care of Aboriginal and Torres Strait Islander peoples and Māori into patients' management • consider cultural, ethical, and religious values and beliefs in teaching and learning	• function effectively and respectfully when working with and teaching with people from different cultural backgrounds
Ethics and professional behaviour	• apply principles of ethical practice to teaching scenarios • act as a role model to promote professional responsibility and ethics among learners • respond appropriately to learners seeking professional guidance	• demonstrate professional values, including commitment to high-quality clinical standards, compassion, empathy, and respect • provide learners with feedback to improve their experiences
Judgement and decision making	• prioritise workloads and manage learners with different levels of professional knowledge or experience • link theory and practice when explaining professional decisions • promote joint problem solving • support a learning environment that allows for independent decision making • use sound and evidence-based judgement during assessments and when giving feedback to learners • escalate concerns about learners appropriately	• provide general advice and support to learners • use health data logically and effectively to investigate difficult diagnostic problems
Leadership, management, and teamwork	• maintain personal and learners' effective performance and continuing professional development • maintain professional, clinical, research, and/or administrative responsibilities while teaching • create an inclusive environment in which learners feel part of the team	• demonstrate the principles and practice of professionalism and leadership in health care • participate in mentor programs, career advice, and general counselling

	• help shape organisational culture to prioritise quality and work safety through openness, honesty, shared learning, and continued improvement	
Health policy, systems, and advocacy	• advocate for suitable resources to provide quality supervision and maintain training standards • explain the value of health data in the care of patients or populations • support innovation in teaching and training	• incompletely integrate public health principals into teaching and practice

EPA 3: Quality improvement

Theme	Quality improvement	AT-EPA-03
Title	**Identify and address failures in health care delivery**	
Description	This activity requires the ability to: • identify and report actual and potential ('near miss') errors • conduct and evaluate system improvement activities • adhere to best practice guidelines • audit clinical guidelines and outcomes • contribute to the development of policies and protocols designed to protect patients[6] and enhance health care • monitor one's own practice and develop individual improvement plans.	
Behaviours		
Professional practice framework domain	**Ready to perform without supervision** Expected behaviours of a trainee who can routinely perform this activity without needing supervision The trainee will:	**Requires some supervision** Possible behaviours of a trainee who needs some supervision to perform this activity The trainee may:
Medical expertise	• use population health outcomes to identify opportunities for improvement in delivering appropriate care • regularly participate in structured medical decision-making forums, where adverse patient outcomes or 'near misses' are reviewed and systems are assessed, such as mortality and morbidity conferences • evaluate environmental and lifestyle health risks, and advocate for healthy lifestyle choices • use standardised protocols to adhere to best practice and prevent the occurrence of wrong-site, wrong-patient procedures • regularly monitor personal professional performance	• contribute to processes on identified opportunities for improvement • recognise the importance of prevention and early detection in clinical practice • use local guidelines to assist patient care decision making
Communication	• support patients to have access to, and use, easy-to-understand, high-quality information about health care • support patients to share decision making about their own health care, to the extent they choose	• demonstrate awareness of the evidence for consumer engagement and its contribution to quality improvement in health care

[6] References to patients in the remainder of this document may include their families, whānau, and/or carers.

	• assist patients' access to their health information, as well as complaint and feedback systems • discuss with patients any safety and quality concerns they have relating to their care • implement the organisation's open disclosure policy	• apply knowledge of how health literacy might affect the way patients or populations gain access to, understand, and use health information
Quality and safety	• demonstrate safety skills, including infection control, adverse event reporting, and effective clinical handover • participate in organisational quality and safety activities, including morbidity and mortality reviews, clinical incident reviews, root cause analyses, and corrective action preventative action plans • participate in systems for surveillance and monitoring of adverse events and 'near misses', including reporting such events • ensure that identified opportunities for improvement are raised and reported appropriately • use clinical audits and registries of data on patients' experiences and outcomes, learnings from incidents, and complaints to improve care	• demonstrate understanding of a systematic approach to improving the quality and safety of health care
Teaching and learning	• translate quality improvement approaches and methods into practice • participate in professional training in quality and safety to ensure a contemporary approach to safety system strategies • supervise and manage the performance of junior colleagues in the delivery of high-quality, safe care	• work within organisational quality and safety systems for the delivery of clinical care • use opportunities to learn about safety and quality theory and systems
Research	• ensure that any protocol for human research is approved by a human research ethics committee, in accordance with the national statement on ethical conduct in human research • be adept at taking consent, displaying appropriate understanding of the research at hand and impact it may have on participants	• recognise that patient participation in research is voluntary and based on an appropriate understanding about the purpose, methods, demands, risks, and potential benefits of the research
Cultural safety	• incorporate appropriate LGBTQIA+ safe language, including gender affirming language	• communicate effectively with patients from culturally and linguistically diverse backgrounds

	• undertake professional development opportunities that address the impact of cultural bias on health outcomes	
Ethics and professional behaviour	• align improvement goals with the priorities of the organisation • contribute to developing an organisational culture that enables and prioritises patients' safety and quality	• comply with professional regulatory requirements and codes of conduct
Judgement and decision making	• use decision-making support tools, such as guidelines, protocols, pathways, and reminders • analyse and evaluate current care processes to improve healthcare	• access information and advice from other health practitioners to identify, evaluate, and improve patients' care management
Leadership, management, and teamwork	• formulate and implement quality improvement strategies as a collaborative effort, involving all key health professionals • support multidisciplinary team activities to lower patients' risk of harm, and promote interdisciplinary programs of education • actively involve clinical pharmacists and nurses in the medication-use process	• demonstrate attitudes of respect and cooperation among members of different professional teams • partner with clinicians and managers to ensure patients receive appropriate care and information on their care
Health policy, systems, and advocacy	• participate in all aspects of the development, implementation, evaluation, and monitoring of governance processes • participate regularly in multidisciplinary meetings where quality and safety issues are standing agenda items, and where innovative ideas and projects for improving care are actively encouraged • measure, analyse, and report a set of specialty-specific process of care and outcome clinical indicators, and a set of generic safety indicators • explain institutional accreditation requirements, such as hospital accreditation • take part in the design and implementation of the organisational systems for: » clinical education and training » defining the scope of clinical practice » performance monitoring and management » safety and quality education and training	• maintain a dialogue with service managers about issues that affect patients' care • contribute to relevant organisational policies and procedures • help shape an organisational culture that prioritises safety and quality through openness, honesty, learning, and quality improvement

EPA 4: Clinical reasoning in diagnosis and management

Theme	Clinical reasoning in diagnosis and management	AT-EPA-04
Title	**Clinically assess and manage the ongoing care of patients**	
Description	This activity requires the ability to: • generate hypotheses, starting from the initial presenting concern, for immunological mechanisms: » that may explain patients' signs and symptoms » to elicit focused histories to enhance or refute the differential diagnoses in arriving at provisional diagnoses and active differential diagnoses • approach investigations and examinations considering the importance of: » likelihood ratios » positive and negative predictive values » post-test probability, such as Bayesian reasoning » pre-test probability » sensitivity » specificity » the impact of false positive and false negative results, both laboratory and clinical, on patient care • recognise hypothesis falsifications, which may occur through signals from clinical histories, examinations, or investigations • recognise common cognitive biases in trainees, other health professionals, and patients, and the influence these can have in diagnostic and management error • differentiate between intuitive and analytical thinking (system I and system II), and the impact of either on diagnostic and/or management error • discuss diagnoses, and acknowledge and contextualise uncertainty, with patients[7], families, and/or carers • demonstrate understanding of different levels, quality, and applicability of evidence, and guide patients in the process of personalised care, shared decision making, and informed consent • demonstrate a structured, objective, and succinct approach to clinical communication and handover in both inpatient and outpatient settings.	
Behaviours		
Professional practice framework domain	**Ready to perform without supervision** Expected behaviours of a trainee who can routinely perform this activity without needing supervision	**Requires some supervision** Possible behaviours of a trainee who needs some supervision to perform this activity
	The trainee will:	The trainee may:
Medical expertise	• elicit accurate, organised, and problem-focused medical histories, considering family, history, physical, psychosocial, and risk factors • perform appropriate physical examinations to inform the diagnostic process	• take patient-centred histories, considering family, history, physical, psychosocial, and risk factors • perform accurate physical examinations • recognise and correctly interpret abnormal findings

[7] References to patients in the remainder of this document may include their families, whānau, and/or carers.

	• demonstrate the ability to include a genogram history where required • distinguish signals from noise, and synthesise and interpret findings from histories and examinations to devise the most likely provisional diagnoses via reasonable differential diagnoses • assess the severity of problems, the likelihood of complications, and clinical outcomes • organise relevant testing and investigations to assist with the establishment of provisional and differential diagnoses, including performing skin testing when indicated • develop personalised management plans based on relevant guidelines and/or evidence, and consider the balance of benefit and harm by taking patients' personal sets of circumstances into account • manage patients with allergy, primary immune deficiency, and disorders of immune regulation • manage a response to adverse events from therapeutic interventions • manage intravenous (IV) access, including potential complications associated with intravascular access devices	• synthesise pertinent information to direct clinical encounters and diagnostic categories • develop appropriate management plans
Communication	• communicate openly, listen, and take patients' concerns seriously, giving them adequate opportunity to ask questions • provide information to patients and their family or carers to enable them to participate in fully informed decision making from various diagnostic, therapeutic, and management options • take ownership and communicate clearly, effectively, respectfully, and promptly with other health professionals / community services involved in patients' care • refer to national best practice standards around the management of patients with allergy • provide standardised action plans, such as the Australasian Society of Clinical Immunology and Allergy anaphylaxis and/or allergic reactions management plan	• anticipate, read, and respond to verbal and nonverbal cues • demonstrate active listening skills • communicate patients' situations to colleagues, including senior clinicians • provide clinical progress updates on patients' care, investigations, and management to relevant clinical stakeholders in patients' care

	• educate patients on the potential benefits, risks, and safety plans of therapies • counsel parents at elevated risk of having a child with allergies on strategies to reduce the risk of their child / children developing allergic diseases • demonstrate the ability to record informed consent of patients or related individuals as part of care management plans	
Quality and safety	• demonstrate safety skills, including infection control, adverse event reporting, clinician disclosure, and effective clinical handover • recognise and effectively deal with aggressive and violent patient behaviours through appropriate training • obtain informed consent before undertaking any investigation or providing treatment (except in an emergency) • ensure patients are informed of the material risks associated with any part of proposed management plans	• perform hand hygiene, and take infection control precautions at appropriate moments • take precaution against assaults from confused or agitated patients, ensuring appropriate care of patients • document history and physical examination findings, and synthesise with clarity and completeness
Teaching and learning	• set defined objectives for clinical teaching encounters, and solicit feedback on mutually agreed goals • regularly reflect upon and self-evaluate professional development • obtain informed consent before involving patients in teaching activities • turn clinical activities into an opportunity to teach, appropriate to the setting • demonstrate the ability to access and present relevant clinical patient information to peer groups	• set unclear goals and objectives for self-learning • self-reflect infrequently • deliver teaching considering learners' level of training
Research	• demonstrate development of a research question, applying specific, measurable, achievable, relevant, and time-bound (SMART) criteria • search for, find, compile, analyse, interpret, and evaluate information relevant to the research subject	• refer to guidelines and medical literature to assist in clinical assessments when required • demonstrate an understanding of the limitations of evidence and the challenges of applying research in daily practice
Cultural safety	• use plain-language patient education materials, and demonstrate cultural and linguistic sensitivity	• display respect for patients' cultures, and attentiveness to social determinants of health

	• demonstrate effective and culturally safe communication and care for Aboriginal and Torres Strait Islander peoples and Māori, and members of other cultural groups • incorporate appropriate LGBTQIA+ safe language, including gender affirming language • use professional interpreters, health advocates, or family or community members to assist in communication with patients, and understand the potential limitations of each • acknowledge patients' beliefs and values, and how these might impact on health	• display an understanding of at least the most prevalent cultures in society, and an appreciation of their sensitivities • appropriately access interpretive or culturally focused services
Ethics and professional behaviour	• abide by the core tenets of clinical ethics, including respecting patient autonomy, advocating for justice, promoting beneficence, and discerning non-maleficence • demonstrate professional values, including compassion, empathy, equity, respect for diversity, integrity, honesty, and partnership to all patients • hold information about patients in confidence, unless the release of information is required by law or public interest • assess patients' capacity for decision making, involving a proxy decision maker appropriately	• demonstrate professional conduct, honesty, and integrity • consider patients' decision-making capacity • identify patients' preferences regarding management and the role of families in decision making • not advance personal interest or professional agendas at the expense of patient or social welfare
Judgement and decision making	• demonstrate clinical reasoning using knowledge, experience, and probabilistic thinking to differentiate signals from noise, and characterise and prioritise patients' problems, making logical, rational decisions, and acting to achieve positive outcomes for patients • use a holistic approach to health, considering comorbidity, uncertainty, and risk • use the best available evidence applying to individual patients for the most effective therapies and interventions to ensure quality care	• demonstrate the ability to gather focused information relevant to patients' care • recognise personal limitations and seek help in an appropriate way when required
Leadership, management, and teamwork	• work effectively as a member of multidisciplinary teams to achieve the best health outcomes for patients	• share relevant information with members of the healthcare team

	• role model the behaviour expected of leaders, and demonstrate mentorship and humility • demonstrate awareness of colleagues in difficulty, and work within the appropriate structural systems to support them while maintaining patient safety	
Health policy, systems, and advocacy	• demonstrate systems thinking, and advocate to improve clinical governance over quality and safety of patient care • participate in health promotion, disease prevention and control, screening, and reporting notifiable diseases • aim to achieve the optimal cost-effective patient care to allow maximum benefit from the available resources • recognise social determinants of health as they pertain to clinical care, and devise strategies to address them	• identify and navigate components of the healthcare system relevant to patients' care • identify and access relevant community resources to support patients' care

EPA 5: Management of transitions in care

Theme	Management of transitions in care	AT-EPA-05
Title	**Manage the transition of patient care between paediatric and adult immunology services, between other specialties, and between other health services**	
Description	This activity requires the ability to: • manage the transition of patients' care to ensure optimal continuation of care between providers • identify the appropriate care providers and other stakeholders with whom to share patient information • exchange pertinent, contextually appropriate, and relevant patient[8] information • perform this activity in multiple settings, including ambulatory, critical care, and inpatient settings.	
Behaviours		
Professional practice framework domain	**Ready to perform without supervision** Expected behaviours of a trainee who can routinely perform this activity without needing supervision	**Requires some supervision** Possible behaviours of a trainee who needs some supervision to perform this activity
	The trainee will:	The trainee may:
Medical expertise	• facilitate an optimal transition of care for patients • identify and manage key risks for patients during transition • anticipate possible changes in patients' conditions, and provide management recommendations, such as transition to general practice-led care, outlining key factors or presentations that would warrant re-referral discussion	• acknowledge the details of patients' conditions, illness severity, and potential emerging issues with appropriate actions • provide accurate summaries of patients' information with accurate identification of problems or issues
Communication	• write relevant and detailed medical record entries, including prioritised problem-based clinical assessments and management plans • write comprehensive, succinct, and accurate summaries of care, including discharge summaries, clinic letters, and transfer documentation, avoiding superfluous information • provide standardised action plans, such as the Australasian Society of Clinical Immunology and Allergy anaphylaxis and/or allergic reactions management plan	• communicate clearly with clinicians and other caregivers • use standardised verbal and written templates to improve the reliability of information transfer and prevent errors and omissions • communicate accurately and in a timely manner to ensure effective transitions between settings, and continuity and quality of care

[8] References to patients in the remainder of this document may include their families, whānau, and/or carers.

	• refer to national best practice standards around the management of patients with allergy • communicate with patients, families, and/or carers about transitions of care, and engage and support these parties in decision making • initiate and maintain verbal communication with other health professionals, when required • liaise with corresponding immunology teams to ensure comprehensive transitions, in the context of transition from paediatric to adult services such as multidisciplinary team via phone or at a dedicated transition clinic	
Quality and safety	• identify patients at risk of poor transitions of care, and mitigate this risk • use electronic tools (where available) to securely store and transfer patient information • use consent processes, including written consent if required, for the release and exchange of information • demonstrate understanding the medicolegal context of written communications	• ensure that handover is complete, or work to mitigate risks if incomplete • ensure all outstanding results or procedures are followed up by receiving units and clinicians • keep patients' information secure, adhering to relevant legislation regarding personal information and privacy
Teaching and learning	• integrate clinical education in handover sessions and other transition of care meetings • tailor clinical education to the level of the professional parties involved	• take opportunities to teach junior colleagues during handover, as necessary
Cultural safety	• communicate with careful consideration to health literacy, language barriers, and culture regarding patients' preferences, and whether they are realistic and possible, respecting patients' choices • incorporate appropriate LGBTQIA+ safe language, including gender affirming language • recognise the timing, location, privacy, and appropriateness of sharing information with patients and their families or carers	• include relevant information regarding patients' cultural or ethnic background in handovers, and whether an interpreter is required
Ethics and professional behaviour	• gain consent for specific information-sharing with third parties, including other clinicians • respect patients' autonomy in their decision making	• maintain respect for patients, families, carers, and other health professionals, including respecting privacy and confidentiality

	• disclose and share only contextually appropriate medical and personal information • demonstrate understanding of the clinical, ethical, and legal rationale for information disclosure • share information about patients' health care in a manner consistent with privacy laws and professional guidelines on confidentiality • demonstrate understanding of the additional complexity related to some types of information, such as genetic information, and seek appropriate advice about disclosure of such information • interact in a collegiate and collaborative way with professional colleagues during transitions of care	
Judgement and decision making	• demonstrate proportionate risk assessment and mitigation for medical diagnoses in the context of available health system resources • ensure patients' care is in the most appropriate facility, setting, or provider	• use a structured approach to consider and prioritise patients' issues • recognise personal limitations and seek help in an appropriate way when required
Leadership, management, and teamwork	• share the workload of transitions of care appropriately, including delegation • demonstrate understanding of the medical governance of patient care, and the differing roles of team members • show respect for the roles and expertise of other health professionals, and work effectively as a member of professional teams • ensure that multidisciplinary teams provide the opportunity for patients' engagement and participation when appropriate	• recognise factors that impact the transfer of care, and help subsequent health professionals understand the issues to continue care • work to overcome the potential barriers to continuity of care, appreciating the role of handover in overcoming these barriers
Health policy, systems, and advocacy	• contribute to processes for managing risks, and identify strategies for improvement in transitions of care • engage in organisational processes to improve transitions of care, such as formal surveys or follow-up phone calls after hospital discharge	• factor transport issues and costs to patients into arrangements for transferring patients to other settings

	• demonstrate active involvement in strategies designed to optimise patient transitions from paediatric to adult services • recognise social determinants of health as they pertain to clinical care, and devise strategies to address them	

EPA 6: Acute care

Theme	Acute care	AT-EPA-06
Title	**Manage the early care of acutely unwell patients**	
Description	This activity requires the ability to: • anticipate high-risk procedures in clinical practice, including: » desensitisation procedures, ensuring they are clinically indicated and performed in the appropriate acuity clinical setting » food and drug challenges • assess seriously unwell patients[9], and initiate management • recognise clinical deterioration, and respond by following the local process for escalation of care • recognise acutely unwell patients who require resuscitation and initiate management, including the administration of adrenaline for anaphylaxis • be competent with basic and advanced life support in line with workplace mandatory training • liaise with medical teams, including with transport services, as required • perform this activity both in inpatient and outpatient settings.	
Behaviours		
Professional practice framework domain	**Ready to perform without supervision** Expected behaviours of a trainee who can routinely perform this activity without needing supervision	**Requires some supervision** Possible behaviours of a trainee who needs some supervision to perform this activity
	The trainee will:	The trainee may:
Medical expertise	• recognise and respond appropriately to immediate life-threatening conditions, such as: » deteriorating / critically unwell patients » hypersensitivity, including: o anaphylaxis o drug hypersensitivity syndrome o Stevens–Johnson syndrome o toxic epidermal necrolysis » infectious conditions, including: o sepsis » organ-threatening inflammatory conditions • demonstrate understanding of adrenaline administration, immune suppression, and sepsis management	• recognise seriously unwell patients requiring immediate care • apply basic life support as indicated • demonstrate understanding of the general medical principles of caring for patients with undifferentiated and undiagnosed conditions • identify potential causes of current deterioration, and comply with escalation protocols • facilitate initial tests to assist in diagnosis and develop management plans for immediate treatment • document information to outline the rationale for clinical decisions and action plans • assess perioperative and periprocedural patients

[9] References to patients in the remainder of this document may include their families, whānau, and/or carers.

	• perform advanced life support for paediatric trainees and basic life support for adult trainees, according to resuscitation council guidelines, to a high level of advanced or basic resuscitation skills • demonstrate knowledge of the potential risks and complications of acute interventions • effectively assess, diagnose, and manage acute undifferentiated clinical presentations • select investigations that ensure maximum patient safety through excluding or diagnosing critical patient issues • systematically identify causes of acute deterioration in health status and levels of physical and cognitive functioning • manage escalations or transitions of care in a proactive and timely manner • develop plans of multidisciplinary treatment, rehabilitation, and secondary prevention following acute events • provide clear and effective discharge summaries with recommendations for ongoing care	
Communication	• communicate clearly with other team members, and coordinate efforts of multidisciplinary team members • use closed-loop and clear communication with other healthcare team members during resuscitation • facilitate early communication with patients, families, and healthcare team members to allow shared decision making • negotiate realistic treatment goals, and determine and explain the expected prognoses and outcomes • refer to national best practice standards around the management of patients with allergy	• demonstrate communication skills to sufficiently support the function of multidisciplinary teams • determine patients' understanding of their diseases, if possible, and what they perceive as the most desirable goals of care

	• provide standardised action plans, such as the Australasian Society of Clinical Immunology and Allergy anaphylaxis and/or allergic reactions management plan • employ communication strategies appropriate for younger patients or those with cognitive difficulties • explain the situation to patients in a sensitive and supportive manner, avoiding jargon and confirming their understanding • determine the level of health literacy of individual patients, and their level of understanding of agreed care decisions	
Quality and safety	• maintain up-to-date certification in advanced life support for paediatric trainees and basic life support for adult trainees • use clinical information technology systems for conducting prospective and retrospective clinical audits • evaluate and explain the benefits and risks of clinical interventions based on individual patients' circumstances • analyse adverse incidents and sentinel events to identify system failures and contributing factors • identify evidence-based practice gaps using clinical indicators, and implement changes to improve patients' outcomes • coordinate and encourage innovation, and objectively evaluate improvement initiatives for outcomes and sustainability	• evaluate the quality of processes through well-designed audits • recognise the risks and benefits of interventions • raise appropriate issues for review at morbidity and mortality meetings • evaluate the quality and safety processes implemented within the workplace, and identify gaps in their structure
Teaching and learning	• demonstrate effective supervision skills and teaching methods adapted to the context of the training • encourage questioning among junior colleagues and students in response to unanswered clinical questions • seek guidance and feedback from healthcare teams to reflect on encounters and improve future patients' care	• mentor and train others to enhance team effectiveness • provide constructive feedback to junior colleagues to contribute to improvements in individuals' skills • coordinate and supervise junior colleagues from the emergency department and the wards
Research	• select studies based on optimal trial design, minimising / acknowledging bias, and precision of measurement • specify research evidence to the needs of individual patients	• demonstrate efficient searching of literature databases to retrieve evidence • refer to evidence-based clinical guidelines and protocols on acutely unwell patients

	• evaluate the value of treatments in terms of relative and absolute benefits, cost, potential patient harm, and feasibility • evaluate the applicability of the results of clinical studies to the circumstances of individual patients, especially those with multiple comorbidities	• use information from credible sources to aid in decision making • demonstrate an understanding of the limitations of the evidence, including levels of evidence, and the challenges of applying research in daily practice
Cultural safety	• negotiate health care decisions in a culturally appropriate way by considering variation in family structures, cultures, religion, or belief systems • integrate culturally appropriate care of Aboriginal and Torres Strait Islander peoples and Māori into patients' management • consider cultural, ethical, and religious values and beliefs in leading multidisciplinary teams	• practise cultural competency appropriate for the community serviced • proactively identify barriers to healthcare access
Ethics and professional behaviour	• develop management plans based on medical assessments of the clinical conditions and multidisciplinary assessments of functional capacity • advise patients of their rights to refuse medical therapy, including life-sustaining treatment • consider the consequences of delivering treatment that is deemed futile, directing to other care as appropriate • facilitate interactions within multidisciplinary teams, respecting values, encouraging involvement, and engaging all participants in decision making • demonstrate critical reflection on personal beliefs and attitudes, including how these may affect patient care and health care policy	• communicate medical management plans as part of multidisciplinary plans • establish, where possible, patients' wishes and preferences about care • contribute to building a productive culture within teams
Judgement and decision making	• recognise the need for escalation of care, and escalate to appropriate staff or services • integrate evidence related to questions of diagnosis, therapy, prognosis, risks, and cause into clinical decision making • reconcile conflicting advice from other specialties, applying judgement in making clinical decisions in the presence of uncertainty • use care pathways effectively, including identifying reasons for variations in care	• involve additional staff to assist in a timely fashion when required • recognise personal limitations and seek help in an appropriate way when required

Leadership, management, and teamwork	• work collaboratively with staff in the emergency department, intensive care, and other subspecialty inpatient units • manage the transition of acute medical patients through their hospital journeys • lead a team by providing engagement while maintaining a focus on outcomes	• collaborate with and engage other team members, based on their roles and skills • ensure appropriate multidisciplinary assessment and management • encourage an environment of openness and respect to lead effective teams
Health policy, systems, and advocacy	• use a considered and rational approach to the responsible use of resources, balancing costs against outcomes • prioritise patients' care based on need, and consider available healthcare resources • collaborate with emergency medicine staff and other colleagues to develop policies and protocols for the investigation and management of common acute medical problems • identify social determinants of health as they pertain to acute care, and devise strategies to address them	• demonstrate understanding of the systems for the escalation of care for deteriorating patients • recognise the role of clinician leadership and advocacy in appraising and redesigning systems of care that lead to better patient outcomes

EPA 7: Longitudinal care

Theme	Longitudinal care	AT-EPA-07
Title	**Manage and coordinate the longitudinal care of patients with chronic illness, disability, and/or long-term health issues, and patients at the end of their lives**	
Description	This activity requires the ability to: • develop management plans and goals in consultation with patients[10], families, and/or carers • manage chronic and advanced conditions, complications, disabilities, and comorbidities • collaborate with other care providers • ensure continuity of care • facilitate self-management and self-monitoring in patients and/or their families or carers • engage with the broader health policy context • recognise the dying phase • support patients to plan for their advance care, and document their own wishes • manage end-of-life care plans.	
Behaviours		
Professional practice framework domain	**Ready to perform without supervision** Expected behaviours of a trainee who can routinely perform this activity without needing supervision	**Requires some supervision** Possible behaviours of a trainee who needs some supervision to perform this activity
	The trainee will:	The trainee may:
Medical expertise	• regularly assess and review care plans for patients with chronic conditions and disabilities, based on short- and long-term clinical and quality of life goals • provide documentation on patients' presentation, management, and progress, including key points of diagnosis and decision making to inform coordination of care • ensure patients contribute to their needs assessments and care planning • monitor treatment outcomes, effectiveness, and adverse events • assess patients' physical and psychological symptoms • avoid unnecessary investigations or treatments, ensuring physical and psychosocial support	• assess patients' knowledge, beliefs, concerns, and daily behaviours related to their chronic condition and/or disability and its management • contribute to medical record entries on histories, examinations, and management plans in a way that is accurate and sufficient as a member of multidisciplinary teams • demonstrate an understanding of the principles of care for patients at the end of their lives • provide timely assessment, and document patients' care plans • manage physical symptoms in alignment with patients' wishes • take steps to alleviate patients' symptoms and distress

[10] References to patients in the remainder of this document may include their families, whānau, and/or carers.

	• estimate prognosis and communicate this appropriately, if requested, including the uncertainties around such estimates • develop and clearly document individualised end-of-life care plans, including patients' preferences for treatment options, resuscitation plans, preferred place of care, and preferred place of death • review the goals of care and treatment plans with patients, families, or carers if significant changes in patients' conditions or circumstances occur	• correctly identify patients approaching the end of life, and provide symptomatic treatment
Communication	• encourage patients' self-management through education to take greater responsibility for their care, and support problem solving • encourage patients' access to self-monitoring devices and assistive technologies • communicate with multidisciplinary team members, and involve patients in that dialogue • establish supportive relationships with patients, families, or carers based on understanding, trust, empathy, and confidentiality • explore patients' concerns across physical, spiritual, cultural, and psychological domains thoughtfully • identify opportunities to discuss end-of-life care • communicate effectively and in a timely manner with other health professionals involved in patients' care • refer to national best practice standards around the management of patients with allergy • provide standardised action plans, such as the Australasian Society of Clinical Immunology and Allergy anaphylaxis and/or allergic reactions management plan	• provide healthy lifestyle advice and information to patients on the importance of self-management • work in partnership with patients, and motivate them to comply with agreed care plans • discuss with patients, family, or carers the goals of care and treatment, and document this in patients' clinical records • ensure consistent messages are given to patients, families, or carers about treatment options, their likelihood of success, risks, and prognosis • provide honest and clear clinical assessment summaries of situations, using plain language and avoiding medical jargon
Quality and safety	• conduct medication chart safety audits and multidisciplinary mortality and morbidity meetings, and provide feedback to colleagues	• participate in continuous quality improvement processes and clinical audits on chronic disease management

	• use innovative models of chronic disease care, using telehealth and digitally integrated support services • review medicine use, and ensure patients understand safe medication administration to prevent errors • support patients' self-management by balancing between minimising risk and helping them become more independent • participate in quality improvement processes impacting on patients' abilities to undertake normal activities of daily living	• identify activities that may improve patients' quality of life • communicate the content of discussions about prognosis and advance care planning to multidisciplinary teams
Teaching and learning	• contribute to the development of clinical pathways for chronic diseases management, based on current clinical guidelines • educate patients to recognise and monitor their symptoms, and undertake strategies to assist their recovery • reflect on personal practice and use this process to guide continuing professional development	• use clinical practice guidelines for chronic diseases management • participate in upskilling in best practice end-of-life care • encourage junior colleagues to participate in multidisciplinary case reviews, mortality and morbidity meetings, and adverse event reviews
Research	• prepare reviews of literature on patients' encounters to present at journal club meetings • search for and critically appraise evidence to resolve clinical areas of uncertainty	• search literature using problem / intervention / comparison / outcome (PICO) format • recognise appropriate use of review articles • recognise that the evidence may be insufficient to resolve uncertainty and make definitive decisions
Cultural safety	• encourage patients from culturally and linguistically diverse backgrounds to join local networks to receive the support needed for long-term self-management • practise culturally responsible medicine based on understanding the personal, historical, and cultural influences on patients, families, and carers • offer support to patients, families, and carers to include cultural or religious practices in their care • incorporate appropriate LGBTQIA+ safe language, including gender affirming language	• provide culturally safe chronic disease management • recognise, respect, and respond to individual preferences and needs of patients, regardless of their culture and religious beliefs • support patients, families, and carers with communication difficulties associated with cultural and linguistic diversity
Ethics and professional behaviour	• share information about patients' health care in a manner consistent	• share information between relevant service providers

	with privacy laws and professional guidelines on confidentiality • use consent processes for the release and exchange of health information • assess patients' decision-making capacity, and appropriately identify and use alternative decision makers • recognise feelings of moral distress and burnout in themselves and colleagues • enhance the quality of life for patients before death to minimise pain and suffering caused by ineffective treatments • recognise the complexity of ethical issues related to human life and death, when considering the allocation of scarce resources	• acknowledge and respect the contribution of health professionals involved in patients' care
Judgement and decision making	• implement stepped care pathways in the management of chronic diseases and disabilities • recognise patients' needs in terms of both internal resources and external support on long-term health care journeys • maximise patients' autonomy and their best interests when making treatment decisions • liaise with other relevant services, providing referrals as necessary	• recognise personal limitations and seek help in an appropriate way when required • define and document patients', families', or carers' goals and agreed outcomes
Leadership, management, and teamwork	• coordinate whole-person care through involvement in all stages of patients' care journeys • use a multidisciplinary approach across services to manage patients with chronic diseases and disabilities • develop collaborative relationships with patients, families, carers, and a range of health professionals	• participate in multidisciplinary care for patients with chronic diseases and disabilities, including organisational and community care, on a continuing basis, appropriate to patients' context
Health policy, systems, and advocacy	• use health screening for early intervention and chronic diseases management • assess alternative models of health care delivery for patients with chronic diseases and disabilities • participate in government initiatives for chronic diseases management to reduce hospital admissions and improve patients' quality of life	• demonstrate awareness of government initiatives and services available for patients with chronic diseases and disabilities, and display knowledge of how to access them

	• help patients access initiatives and services for patients with chronic diseases and disabilities

EPA 8: Communication with patients

Theme	Communication with patients	AT-EPA-08
Title	**Discuss diagnoses and management plans with patients**	
Description	This activity requires the ability to: • select suitable contexts, and include family and/or carers and other team members • adopt a patient-centred perspective, including adjusting for cognition and disabilities • select and use appropriate modalities and communication strategies • structure conversations intentionally • negotiate mutually agreed management plans • verify patients'[11], family members', or carers' understanding of information conveyed • develop and implement plans to ensure actions occur • ensure conversations are documented.	
Behaviours		
Professional practice framework domain	**Ready to perform without supervision** Expected behaviours of a trainee who can routinely perform this activity without needing supervision The trainee will:	**Requires some supervision** Possible behaviours of a trainee who needs some supervision to perform this activity The trainee may:
Medical expertise	• anticipate and be able to correct any misunderstandings patients may have about their conditions and/or risk factors • be aware of information, and direct patients to evidence-based literature to correct misconceptions or misunderstandings of their disease and/or risk factors • inform patients of all aspects of their clinical management, including assessments and investigations, and give them adequate opportunity to question or refuse interventions and treatments • discuss expectations of disease reversal or control with patients and their family or carers • provide information to patients to enable them to make informed decisions about diagnostic, therapeutic, and management options	• apply knowledge of the scientific basis of health and disease to the management of patients • demonstrate an understanding of the clinical problem being discussed • demonstrate the ability to ascertain patients' concerns regarding aspects of their disease and/or management • formulate management plans in partnership with patients

[11] References to patients in the remainder of this document may include their families, whānau, and/or carers.

	• seek to understand the concerns and goals of patients, and plan management in partnership with them • manage adverse reactions to immunisations, and advise patients and their families or carers regarding future immunisation scheduling • counsel patients on avoidance strategies • counsel patients on recognition and acute management of anaphylaxis, including administration of injectable adrenaline and autoinjectors • counsel patients and families on the potential benefits, risks, and safety plans of therapies • counsel patients and families regarding the benefits and risks of immunisation • educate families on management and the community resources available • counsel parents at high risk of having children with allergies on strategies to reduce the risk of their child / children developing allergic diseases	
Communication	• use appropriate communication strategies and modalities for communication, such as emails, face-to-face, or phone calls • discuss with patients, families, and carers if and/or how virtual care can support their health needs, including the limitations of virtual health care • obtain patient consent to use the virtual communication method • use a communication format designed to compensate for any connectivity issues • produce consultation reports for referring clinicians • elicit patients' views, concerns, and preferences, promoting rapport • provide information to patients in plain language, avoiding jargon, acronyms, and complex medical terms • ask patients to share their thoughts or explain their management plans in their own words, to verify understanding	• select appropriate modes of communication • engage patients in discussions, avoiding the use of jargon • check patients' understanding of information • adapt communication style in response to patients' age, developmental level, and cognitive, physical, cultural, socioeconomic, and situational factors • collaborate with patient liaison officers as required

	• encourage questions, and answer them thoroughly • refer to national best practice standards around the management of patients with allergy • provide standardised action plans, such as the Australasian Society of Clinical Immunology and Allergy anaphylaxis and/or allergic reactions management plan • convey information considerately and sensitively to patients, seeking clarification if unsure of how best to proceed • recognise the role of family or carers, and, when appropriate, encourage patients to involve their family or carers in decisions about their care • treat children and young people respectfully, and listen to their views	
Quality and safety	• discuss with patients their condition and the available management options, including potential benefits and harms • provide information to patients in a way they can understand before asking for their consent • consider young people's capacity for decision making and consent • recognise and take precautions where patients may be vulnerable, such as issues of child protection, self-harm, or elder abuse • participate in processes to manage patient complaints • advise on patients undergoing solid organ transplantation to minimise the probability of graft rejection	• inform patients of the material risks associated with proposed management plans • treat information about patients as confidential
Teaching and learning	• discuss the aetiology of diseases, and explain the purpose, nature, and extent of assessments to be conducted • obtain informed consent or other valid authority before involving patients in teaching	• respond appropriately to information sourced by patients, and to patients' knowledge regarding their condition
Research	• provide information to patients in a way they can understand before asking for their consent to participate in research • obtain an informed consent or other valid authority before involving patients in research	• refer to evidence-based clinical guidelines • demonstrate an understanding of the limitations of the evidence and the challenges of applying research in daily practice

	• provide information to patients that is based on guidelines issued by the National Health and Medical Research Council and/or Health Research Council of New Zealand	
Cultural safety	• demonstrate effective and culturally competent communication with Aboriginal and Torres Strait Islander peoples and Māori • effectively communicate with members of other cultural groups by meeting patients' specific language, cultural, and communication needs • incorporate appropriate LGBTQIA+ safe language, including gender affirming language • use qualified language interpreters or cultural interpreters to help meet patients' communication needs • provide plain language and culturally appropriate written materials to patients when possible	• identify when to use interpreters • allow enough time for communication across linguistic and cultural barriers
Ethics and professional behaviour	• encourage and support patients to be well informed about their health, and to use information wisely when they make decisions • encourage and support patients, and, when relevant, their families or carers, in caring for themselves and managing their health • demonstrate respectful, professional relationships with patients • prioritise honesty, patients' welfare, and community benefit above self-interest • develop a high standard of personal conduct, consistent with professional and community expectations • support patients' rights to seek second opinions	• respect the preferences of patients • communicate appropriately, consistent with the context, and respect patients' needs and preferences • maximise patient autonomy, and support their decision making • avoid sexual, intimate, and/or financial relationships with patients • demonstrate a caring attitude towards patients • respect patients, including protecting their rights to privacy and confidentiality • behave equitably towards all, irrespective of gender, age, culture, socioeconomic status, sexual preferences, beliefs, contribution to society, illness-related behaviours, or the illness itself • use social media ethically and according to legal obligations to protect patients' confidentiality and privacy
Leadership, management, and teamwork	• discuss medical assessments, treatment plans, and investigations with patients and primary care teams, working collaboratively with all	• answer questions from team members • summarise, clarify, and communicate responsibilities of healthcare team members

	• communicate effectively with team members involved in patients' care, and with patients, families, and carers • discuss patients' care needs with healthcare team members to align them with the appropriate resources • facilitate an environment in which all team members feel they can contribute and their opinion is valued • communicate accurately and succinctly, and motivate others on the healthcare team	• keep healthcare team members focused on patient outcomes
Health policy, systems, and advocacy	• collaborate with other services, such as community health centres and consumer organisations, to help patients navigate the healthcare system • demonstrate awareness of social determinants of health and how these may impact on shared decision making	• communicate with and involve other health professionals as appropriate

EPA 9: Prescribing

Theme	Prescribing	AT-EPA-09
Title	**Prescribe therapies tailored to patients' needs and conditions**	
Description	This activity requires the ability to: • take and interpret medication histories • choose appropriate medicines based on pharmacology knowledge, taking into consideration age, weight, comorbidities, potential drug interactions, risks, and benefits • communicate with patients[12], families, or carers about the benefits and risks of proposed therapies • provide instructions on medication administration effects and side effects • monitor medicines for efficacy and safety • review medicines and interactions, and cease where appropriate • collaborate with pharmacists • be familiar with core immunology and allergy medications, including immunoglobulin, replacement therapy, immunotherapy, and immunosuppression / immunomodulation.	
Behaviours		
Professional practice framework domain	**Ready to perform without supervision** Expected behaviours of a trainee who can routinely perform this activity without needing supervision	**Requires some supervision** Possible behaviours of a trainee who needs some supervision to perform this activity
	The trainee will:	The trainee may:
Medical expertise	• identify patients' disorders requiring pharmacotherapy • consider non-pharmacologic therapies • consider age, chronic disease status, lifestyle factors, allergies, potential drug interactions, and patient preference prior to prescribing new medications • plan for follow-up and monitoring • educate patients, families, and carers on the use of prophylactic antibiotics and immunoglobulin replacement therapy (IgRT) • counsel patients and their family or carers on allergen avoidance strategies • counsel patients and their family or carers on recognition and acute management of anaphylaxis, including prompt administration of injectable adrenaline and instruction in use of autoinjectors	• be aware of potential side effects and practical prescription points, such as medication compatibility and monitoring in response to therapies • select medicines for common conditions appropriately, safely, and accurately • demonstrate understanding of rationale, risks, benefits, side effects, contraindications, dosage, and drug interactions • identify and manage adverse events

[12] References to patients in the remainder of this document may include their families, whānau, and/or carers.

	• prescribe and arrange the supply of immunoglobulin replacement therapy according to current guidelines and limitations of issuing authorities, such as the National Blood Authority • prescribe allergen-specific immunotherapy when indicated • prescribe immunomodulatory therapies and plasmapheresis in autoimmune, inflammatory, and primary immunodeficiency conditions as indicated	
Communication	• discuss and evaluate the risks, benefits, and rationale of treatment options, making decisions in partnership with patients • write clear and legible prescriptions in plain language, and include specific indications for the anticipated duration of therapy • educate patients about the intended use, expected outcomes, and potential side effects for each prescribed medication, addressing the common, rare, and serious effects at the time of prescribing to improve patients' adherence to pharmacotherapy • provide standardised action plans, such as the Australasian Society of Clinical Immunology and Allergy anaphylaxis and/or allergic reactions management plan • describe how the medication should and should not be administered, including any important relationships to food, time of day, and other medicines being taken • ensure patients' understanding by asking them to repeat back pertinent information, such as when to return for monitoring and whether therapy continues after this single prescription • identify patients' concerns and expectations, and explain how medicines might affect their everyday lives • counsel patients on hidden allergens and appropriate avoidance • counsel patients and carers regarding consequences of multiple food exclusions	• discuss and explain the rationale for treatment options with patients, families, or carers • explain the benefits and burdens of therapies, considering patients' individual circumstances • write clearly legible scripts or charts using generic names of the required medication in full, including mg / kg / dose information and all legally required information • seek further advice from experienced clinicians, dieticians, or pharmacists when appropriate

	• advise patients of the risks and benefits of starting, continuing, withholding, or ceasing venom immunotherapy	
Quality and safety	• review medicines regularly to reduce non-adherence, and monitor treatment effectiveness, possible side effects, and drug interactions, ceasing unnecessary medicines • use electronic prescribing tools where available, and access electronic drug references to prevent errors caused by drug interactions and poor handwriting • prescribe new medicines only when they have been demonstrated to be safer or more effective at improving patient-oriented outcomes than existing medicines • participate in clinical audits to improve prescribing behaviour, including an approach to polypharmacy and prescribing cascade • report suspected adverse events to the appropriate bodies, such as the Advisory Committee on Medicines, Centre for Adverse Reactions Monitoring, and the Adverse Event Management System, and update patients' medical records	• check the dose before prescribing • monitor side effects of prescribed medicines • identify medication errors and institute appropriate measures • use electronic prescribing systems safely • rationalise medicines to avoid polypharmacy
Teaching and learning	• use continuously updated software for computers and electronic prescribing programs • ensure patients understand management plans, including adherence issues • use appropriate guidelines and evidence-based medicine resources to maintain a working knowledge of current medicines • be aware of new medicines in development, and their underlying pathophysiological basis	• undertake continuing professional development to maintain currency with prescribing guidelines • reflect on prescribing, and seek feedback from a supervisor
Research	• critically appraise research material to ensure any new medicine improves patient-oriented outcomes more than older medicines, and not just more than placebo • use sources of independent information about medicines that provide accurate summaries of the available evidence on new medicines	• make therapeutic decisions according to the best evidence • recognise where evidence is limited, compromised, or subject to bias or conflict of interest

Cultural safety	• explore patients' understanding of and preferences for non-pharmacological and pharmacological management • offer patients effective choices based on their expectations of treatment, health beliefs, and cost, such as the need for financial consent or assistance • interpret and explain information to patients at the appropriate level of their health literacy • anticipate queries to help enhance the likelihood of medicines being taken as advised • ensure appropriate information is available at all steps of the medicine management pathway	• appreciate patients' cultural and religious backgrounds, attitudes, and beliefs, and how these might influence the acceptability of pharmacological and non-pharmacological management approaches
Ethics and professional behaviour	• provide information to patients about prescribed medicines and: » how to take the medicine » potential side effects » what the medicine does » what the medicine is for » when it should be stopped • make prescribing decisions based on good safety data when the benefits outweigh the risks involved • demonstrate understanding of the ethical implications of pharmaceutical industry-funded research and marketing	• consider the efficacy of medicines in treating illnesses, including the relative merits of different non-pharmacological and pharmacological approaches • follow regulatory and legal requirements and limitations regarding prescribing • follow organisational policies regarding pharmaceutical representative visits and drug marketing
Judgement and decision making	• use a systematic approach to select treatment options • use medicines safely and effectively to get the best possible results • choose suitable medicines only if medicines are considered necessary and will benefit patients • prescribe medicines appropriately to patients' clinical needs, in doses that meet their individual requirements, for a sufficient length of time, with the lowest cost to them • evaluate new medicines in relation to their possible efficacy and safety profile for individual patients	• recognise personal limitations and seek help in an appropriate way when required • consider the following factors for all medicines: » contraindications » cost to patients, families, and the community » funding and regulatory considerations » generic versus brand medicines » interactions » risk-benefit analysis
Leadership, management, and teamwork	• interact with medical, pharmacy, and nursing staff to ensure safe and effective medicine use	• work collaboratively with pharmacists • participate in medication safety and morbidity and mortality meetings

Health policy, systems, and advocacy	• choose medicines in relation to comparative efficacy, safety, and cost-effectiveness against medicines already on the market • prescribe for individual patients, considering history, current medicines, allergies, and preferences, ensuring that resources are used wisely for the benefit of patients • identify and address social determinants of health as they pertain to prescribing	• prescribe in accordance with the organisational policy

EPA 10: Investigations and procedures

Theme	Investigations and procedures	AT-EPA-11
Title	**Select, organise, and interpret investigations, and plan, prepare for, perform, and provide aftercare for important practical procedures**	
Description	This activity requires the ability to: • select, plan, and use evidence-based clinically appropriate investigations and procedures • prioritise patients[13] receiving investigations (if there is a waiting list) and procedures • evaluate the anticipated value of the investigation or procedure • obtain informed consent • select appropriate investigations and procedures in partnership with patients, their families, or carers to facilitate choices that are right for them • organise set-up of equipment, maintaining an aseptic field • communicate aftercare protocols and instructions to patients and medical and nursing staff • perform investigations and procedures, including: » desensitisation protocols for aeroallergens, drugs, and venom » drug and food challenges » intradermal testing » patch testing » skin prick testing • resolve unexpected events and complications during and after procedures • arrange aftercare for patients • interpret results and outcomes of investigations and procedures, including imaging and reports • communicate the outcome of procedures and investigations to patients • perform this activity across relevant settings, including day clinic, outpatients, and theatre.	
Behaviours		
Professional practice framework Domain	**Ready to perform without supervision** Expected behaviours of a trainee who can routinely perform this activity without needing supervision	**Requires some supervision** Possible behaviours of a trainee who needs some supervision to perform this activity
	The trainee will:	The trainee may:
Medical expertise	• choose evidence-based investigations, and frame them as an adjunct to comprehensive clinical assessments • assess patients' concerns, and determine the need for specific tests that are likely to result in overall benefit • develop plans for investigations, identifying their roles and timing	• provide rationale for investigations • recognise the significance of abnormal test results, and act on these • consider patient factors and comorbidities • consider age-specific reference ranges • assess patients and identify indications for procedures

[13] References to patients in the remainder of this document may include their families, whānau, and/or carers.

	• recognise and correctly interpret abnormal findings, considering patients' specific circumstances, and act accordingly • select procedures by assessing patient-specific factors, risks, benefits, and alternatives • confidently and consistently perform a range of common procedures • ensure team members are aware of all allergies / adverse reactions identified, and take precautions to avoid allergies / adverse reactions during procedures • ensure patients have complied with pre-procedure preparation • confirm the correct position / site / side / level on patients for planned procedures • recognise and manage effectively complications arising during or after procedures • recognise and correctly interpret normal and abnormal findings of diagnostic procedures	• check for allergies and adverse reactions • consider risks and complications of procedures • interpret results of diagnostic procedures • organise and document postprocedural reviews of patients
Communication	• explain to patients the potential benefits, risks, costs, burdens, and side effects of each option, including the option to have no investigations • use clear and simple language, and check that patients understand the terms used and agree to proceed with proposed investigations • identify patients' concerns and expectations, providing adequate explanations on the rationale for individual test ordering • confirm whether patients have understood the information they have been given and whether they need more information before deciding • use written or visual material or other aids that are accurate and up to date to support discussions with patients • explain findings or possible outcomes of investigations to patients, families, and carers • give information that patients may find distressing in a considerate way	• discuss the indications, risks, benefits, and complications of investigations with patients before ordering investigations • explain the results of investigations to patients • arrange investigations, providing accurate and informative referrals, and liaise with other services where appropriate • explain the process of procedures to patients • help patients, families, and carers choose procedures • communicate with members of procedural teams so all team members understand who each member is • discuss postprocedural care with patients, families, and carers • complete relevant patients' documentation, and conduct appropriate clinical handovers

	• accurately document procedures in the clinical notes, including informed consent, procedures requested and performed, reasons for procedures, medicines given, aseptic technique, and aftercare • explain procedures clearly to patients, families, and carers, including reasons for procedures, potential alternatives, and possible risks, to facilitate informed choices • counsel patients sensitively and effectively, and support them to make informed choices • address patients', families', or carers' concerns relating to procedures, providing opportunities to ask questions • tailor language according to individual patients' age and capacity to understand • communicate effectively with team members, patients, families, and carers prior to, during, and after procedures • ensure team members are confident and competent in their assigned roles	
Quality and safety	• identify adverse outcomes that may result from proposed investigations, focusing on patients' individual situations • obtain informed consent or other valid authority before undertaking any procedure • set up all necessary equipment, and consistently use universal precautions and aseptic technique • confirm patients' identification, verify the procedure, and, where appropriate, the correct position / site / side / level for procedures • ensure that information on patients' consent forms matches procedures to be performed • identify, document, and appropriately notify of any adverse events or equipment malfunction	• consider safety aspects of investigations when planning them • seek help with interpretation of test results for less common tests or indications or unexpected results • provide information in a manner so that patients, families, and carers are fully informed when consenting to any procedures • demonstrate an inconsistent application of aseptic technique • identify patients using approved patients' identifiers before any treatment or intervention is initiated • attempt to perform a procedure in an unsafe environment
Teaching and learning	• use appropriate guidelines, evidence sources, and decision support tools • participate in clinical audits to improve test ordering strategies for diagnoses and screening	• undertake professional development to maintain currency with investigation guidelines • participate in continued professional development • help junior colleagues develop new skills

	• refer to and/or be familiar with relevant published procedural guidelines prior to undertaking procedures • organise or participate in in-service training on new technology • provide specific and constructive feedback and comments to junior colleagues • initiate and conduct skills training for junior staff	• actively seek feedback on personal technique until competent
Research	• provide patients with relevant information if a proposed investigation is part of a research program • obtain written consent from patients if the investigation is part of a research program	• refer to evidence-based clinical guidelines • consult current research on investigations
Cultural safety	• acknowledge and consider patients' views and preferences about any proposed investigations and the adverse outcomes they are most concerned about • consider individual patients' cultural perception of health and illness, and adapt practice accordingly	• consider patients' cultural and religious backgrounds, attitudes, and beliefs, and how these might influence the acceptability of proposed investigations and procedures
Ethics and professional behaviour	• remain within the scope of the authority given by patients (with the exception of emergencies) • discuss with patients how decisions will be made once the investigation has started if the patient is not able to participate in decision making • respect patients' decisions to refuse investigations, even if their decisions may not be appropriate or evidence based • advise patients there may be additional costs, which patients may wish to clarify before proceeding • explain the expected benefits as well as the potential burdens and risks of any proposed investigations before obtaining informed consent or other valid authority • demonstrate awareness of complex issues related to genetic information obtained from investigations, and subsequent disclosure of such information • confidently perform common procedures	• identify appropriate proxy decision makers when required • choose not to investigate in situations where it is not appropriate for ethical reasons • practise within current ethical and professional frameworks • practise within own limits, and seek help when needed • involve patients in decision making regarding investigations, obtaining the appropriate informed consent, including financial consent, if necessary • perform procedures when adequately supervised • follow procedures to ensure safe practice

	• identify appropriate proxy decision makers when required • show respect for knowledge and expertise of colleagues • maximise patient autonomy in decision making	
Judgement and decision making	• evaluate the costs, benefits, and potential risks of each investigation in a clinical situation • adjust investigative paths depending on test results received • consider whether patients' conditions may get worse or better if no tests are selected • identify roles and optimal timing for diagnostic procedures • critically appraise information from assessment and evaluation of risks and benefits to prioritise patients on a waiting list • make clinical judgements and decisions based on available evidence • select the most appropriate and cost-effective diagnostic procedures • adapt procedures in response to assessments of risks to individual patients • select appropriate investigations on the samples obtained in diagnostic procedures	• choose the most appropriate investigation for clinical scenarios in discussion with patients • recognise personal limitations and seek help in an appropriate way when required • prioritise which patients receive procedures first (if there is a waiting list) • assess personal skill levels, and seek help with procedures when appropriate • use tools and guidelines to support decision making • recommend suboptimal procedures for patients
Leadership, management, and teamwork	• consider the role other members of the healthcare team might play, and what other sources of information and support are available • ensure results are checked in a timely manner, taking responsibility for following up results • explain critical steps, anticipated events, and equipment requirements to teams on planned procedures • provide staff with clear aftercare instructions, and explain how to recognise possible complications • identify relevant management options with colleagues, according to their level of training and experience, to reduce error, prevent complications, and support efficient teamwork	• demonstrate understanding of what parts of an investigation are provided by different doctors or health professionals • ensure all relevant team members are aware that a procedure is occurring • discuss patients' management plans for recovery with colleagues

	• coordinate efforts, encourage others, and accept responsibility for work done	
Health policy, systems, and advocacy	• select and justify investigations regarding the pathological basis of disease, appropriateness, utility, safety, and cost effectiveness • consider resource utilisation through peer review of testing behaviours • discuss serious incidents at appropriate clinical review meetings • initiate local improvement strategies in response to serious incidents • use resources efficiently when performing procedures	• perform procedures in accordance with organisational guidelines and policies

EPA 11: Clinic management

Theme	Clinic management	AT-EPA-11
Title	**Manage an outpatient clinic**	
Description	This activity requires the ability to: • manage medical procedures and treatments • manage clinic services • oversee quality improvement activities • communicate with patients[14], their families, and/or carers • liaise with other health professionals and team members • demonstrate problem-solving skills • responsibly use public resources.	
Behaviours		
Professional practice framework domain	**Ready to perform without supervision** Expected behaviours of a trainee who can routinely perform this activity without needing supervision The trainee will:	**Requires some supervision** Possible behaviours of a trainee who needs some supervision to perform this activity The trainee may:
Medical expertise	• effectively identify and address current clinical concerns, as well as longer-term clinical objectives, as appropriate to patients' context • evaluate environmental and lifestyle health risks, and advocate for healthy lifestyle choices • create accurate and appropriately prioritised problem lists in the clinical notes or as part of ambulatory care reviews • update documentation accurately and in a time frame appropriate to the clinical situation of patients	• identify and address some current clinical concerns • demonstrate understanding of the importance of prevention, early detection, health maintenance, and chronic condition management
Communication	• help patients navigate the healthcare system to improve access to care by collaboration with other services, such as community health centres and consumer organisations • link patients to specific community-based health programs and group education programs • provide patients with evidence-based information and resources	• wherever practical, meet patients' specific language and communication needs • facilitate appropriate use of interpreter services and translated materials
Quality and safety	• practice health care that maximises patient safety	• take reasonable steps to address issues if patients' safety may be compromised

[14] References to patients in the remainder of this document may include their families, whānau, and/or carers.

	• adopt a systematic approach to the review and improvement of professional practice in the outpatient clinic setting • identify aspects of service provision that may be a risk to patients' safety • ensure that patients are informed about fees and charges	• demonstrate understanding of a systematic approach to improving the quality and safety of health care • participate in organisational quality and safety activities, including clinical incident reviews
Teaching and learning	• evaluate their own professional practice • demonstrate learning behaviour and skills in educating junior colleagues • contribute to the generation of knowledge • maintain professional continuing education standards	• recognise the limits of personal expertise, and involve other professionals as needed to contribute to patients' care • use information technology appropriately as a resource for modern medical practice
Research	• obtain informed consent or other valid authority before involving patients in research • inform patients about their rights, the purpose of the research, the procedures to be undergone, and the potential risks and benefits of participation before obtaining consent	• allow patients to make informed and voluntary decisions to participate in research
Cultural safety	• apply knowledge of the cultural needs of the community served, and how to shape service to those people • mitigate the influence of own culture and beliefs on interactions with patients and decision making • adapt practice to improve patient engagement and health outcomes • incorporate appropriate LGBTQIA+ safe language, including gender affirming language	• acknowledge the social, economic, cultural, and behavioural factors influencing health, both at individual and population levels
Ethics and professional behaviour	• identify and respect the boundaries that define professional and therapeutic relationships • respect the roles and expertise of other health professionals • comply with the legal requirements of preparing and managing documentation • demonstrate awareness of financial and other conflicts of interest	• recognise the responsibility to protect and advance the health and wellbeing of individuals and communities • maintain the confidentiality of documentation, and store clinical notes appropriately • ensure that the use of social media is consistent with ethical and legal obligations

Judgement and decision making	• integrate prevention, early detection, health maintenance, and chronic condition management, where relevant, into clinical practice • work to achieve optimal and cost-effective patient care that allows maximum benefit from the available resources	• demonstrate understanding of the appropriate use of human resources, diagnostic interventions, therapeutic modalities, and health care facilities
Leadership, management, and teamwork	• prepare for and conduct clinical encounters in a well-organised and time-efficient manner • work effectively as a member of multidisciplinary teams or other professional groups • ensure that all important discussions with colleagues, multidisciplinary team members, and patients are accurately documented • review discharge summaries, notes, and other communications written by junior colleagues • support colleagues who raise concerns about patients' safety	• attend relevant clinical meetings regularly
Health policy, systems, and advocacy	• demonstrate capacity to engage in the surveillance and monitoring of the health status of populations in the outpatient setting • maintain good relationships with health agencies and services • apply the principles of efficient and equitable allocation of resources to meet individual, community, and national health needs • enrol patients in the Australian National Persistent Identifier (PID) database	• recognise common population health screening and prevention approaches

Knowledge Guides

Knowledge guides (KGs) provide detailed guidance to trainees on the important topics and concepts trainees need to understand to become experts in their chosen specialty.

Trainees are not expected to be experts in all areas or have experience related to all items in these guides.

#	Title
1	Foundations of immunology, diagnostics, and therapeutics
2	Immunodeficiency
3	Autoimmune and autoinflammatory disease
4	Allergy and hypersensitivity reactions
5	Transplantation
6	Vaccination

EPIDEMIOLOGY, PATHOPHYSIOLOGY, AND CLINICAL SCIENCES

Advanced Trainees will have in-depth knowledge of the topics listed under each clinical sciences heading.

For the statistical and epidemiological concepts listed, trainees should be able to describe the underlying rationale, the indications for using one test or method over another, and the calculations required to generate descriptive statistics.

Evolution and development

- Principles of immune organ development
- Selective pressure on immune system during evolution

Structure and organisation of the immune system

- Cutaneous and mucosal immune systems
- Physiology of the upper and lower airways, skin, and gastrointestinal (GI) tract
- Innate and adaptive immunity
- Basic development, location, and structure of primary and secondary lymphoid organs:
  - bone marrow
  - colonic patches
  - lymph nodes and lymphatic system
  - mucosa-associated lymphoid tissue (MALT), including tonsils
  - Peyer's patches
  - spleen
  - thymus
- Emerging understanding of the vermiform appendix in gut immune homeostasis
- Lymphocyte circulation in the body – anatomy and signals, including cellular adhesion and chemokines
- Organisation of secondary lymphoid organs:
  - primary and secondary follicles
  - principles of lymphocyte traffic
  - T-zones

Cellular components of the immune system

- Atypical lymphocytes, innate lymphoid cells, and natural killer cells
- Basophils, eosinophils, and mast cells
- Distribution, ontogeny, and subtypes of T and B cells
- Lymphocytes
- Phagocytes

Signal one – antigen receptors

- Antigen-presentation to T cells – distinctions between MHC class I & II
- B cell activation:
  - antigen presentation to B cells
  - class switch recombination, including cytokine signals, and molecular mechanisms of somatic hypermutation
- Classification of nucleic acid receptors, such as RIG-I-like and toll-like receptors
- Danger-associated molecular patterns (DAMPs) and pathogen-associated molecular patterns (PAMPs)
- Lectins, leucine rich repeats, and toll-like receptors
- Molecular mechanisms of V(D)J recombination
- Pathogen recognition receptors (PRP)

Signal two – accessory signals

- Adhesion molecules
- B7 family
- Complement
- Cytokine receptor families
- Tumour necrosis factor receptor (TNFR) superfamily

Cell signalling

- Cytokine signalling via nuclear factor kappa-light-chain-enhancer (Nf-kB) versus interferon-based signalling
- Principles of cytokine signalling via Janus kinase (JAK) and signal transducer and activator of transcription (STAT)
- Proximal signalling after T cell receptor or B cell receptor ligation – SMAC organisation and constituents
- Toll-like receptors signalling via myeloid differentiation primary response gene 88 (MyD88) and Nf-kB

Tolerance

- Central tolerance in the thymus and bone marrow:
  - anergy
  - clonal deletion
  - receptor editing
- Dominant tolerance by regulatory T cells – FoxP3+ T-cells
- Two-signal models of peripheral tolerance

Immunology memory

- B cell differentiation in germinal centres, including affinity maturation
- Memory B cells
- Plasma cells:
  - long-lived
  - short-lived
- T cell memory subsets:
  - Tfh
  - Th1
  - Th2
  - Th17

Effector mechanisms

- Acute phase response
- Antibody function
- Complement
- Cytotoxicity
- Fibrosis
- Mast cell mediators
- Polymorphonuclear cell recruitment and action

Allergy and hypersensitivity

- Gell and Coombs classification system: hypersensitivity responses – type I
  - cells of the allergic reaction, such as:
    - basophils
    - eosinophils
    - mast cells
  - cytokines/chemokines relevant in allergic responses
  - generation and regulation of Type 2 helper T (Th2) responses
  - Immunoglobulin E (IgE)-mediated acute-phase and late-phase reactions
  - IgE and receptor interactions
- Gell and Coombs classification system: hypersensitivity responses – types II–IV
  - antibody-mediated cytotoxicity responses
  - cell mediated immunity – types IV a, b, c, d
  - immune complexes, immunologic properties, and mechanisms of clearance
- Putative mechanism of desensitisation
  - immunoglobulin G4 (IgG4)
  - regulatory T cell (Tregs)

Transplantation immunology
- Allograft rejection
- Graft-versus-host reactions
- Maintenance of tolerance

Tumour immunology
- Immune surveillance
- Oncogenes
- Translocations
- Tumour-specific and tumour-associated antigens
- Tumour suppressor genes
- Checkpoint inhibitor

Immune response to infections
- Extracellular bacteria
- Fungi, such as various locations, including:
  - » cutaneous
  - » lung
  - » sinuses
- Helminth and other parasites such as scabies
- Intracellular bacteria such as mycobacteria
- Protozoa
- Viruses

Human immunodeficiency virus (HIV)
- HIV life cycle
- HIV diversity
- Pathogenesis of HIV-induced immunodeficiency
- Principles of antiretroviral therapy and opportunistic infection prophylaxis

INVESTIGATIONS, PROCEDURES, AND CLINICAL ASSESSMENT TOOLS

Advanced Trainees will know the scientific foundation of each investigation and procedure, including relevant anatomy and physiology. They will be able to interpret the reported results of each investigation or procedure.

Advanced Trainees will know how to explain the investigation or procedure to patients[15], families, and carers, and be able to explain procedural risk and obtain informed consent where applicable.

Intravenous immunoglobulin (IVIG)
- Indications for:
  - » IVIG and subcutaneous immunoglobulin (SCIg) replacement therapy for primary immunodeficiency and systemic autoimmune and inflammatory disease
  - » SCIg and IVIG therapy for immunomodulation:
    - o collection and manufacturing process for immunoglobulin preparations, and impact on efficacy and safety
    - o dose calculation and monitoring, dose escalation, and loading, including compliance with formal guidelines, such as:
      - BloodSTAR
      - National Blood Authority (NBA)
      - New Zealand Blood Service (NZBS)
    - o efficacy monitoring of immunoglobulin infusions by clinical parameters, such as infections through symptoms and immunoglobulin G levels
    - o expectations of disease reversal or control with patients, their family, and/or carers
    - o IVIG's potential adverse effects
    - o major components of IVIG and alternative preparations of immunoglobulin
    - o practicalities of administration, monitoring, and prescribing IVIG and SCIg therapy

[15] References to patients in the remainder of this document may include their families, whānau, and/or carers.

- prescribe and arrange supply of IVIG and SCIg according to current guidelines and limitations of issuing authorities, such as NBA, Australian Red Cross blood transfusion service, and NZBS recommendations
- timing of prophylactic immunisations relative to immunomodulatory therapies, such as IVIG

Procedures

- Desensitisation procedures, when using established protocols
- De-labelling of patients

IMPORTANT SPECIFIC ISSUES

Advanced Trainees will identify important specialty-specific issues and the impact of these on diagnosis, management and outcomes.

Action / Management plans

- Familiarity with and appropriately use standardised action and management plans for anaphylaxis and/or allergic reactions, and hereditary angioedema, as per the Australasian Society of Clinical Immunology and Allergy

Environmental changes and sustainability

- Be aware of potentially relevant health impacts of climate change, such as:
  - alterations in pollen distribution
  - expanding geographic areas for insect-borne diseases
  - increasing storm activity
- Consider sustainability and environmental impact of current and emerging immunological diagnostics and therapeutics

Immunological therapeutics

- Access, availability, costs, and potential benefits versus risks of gene therapy for inborn errors of immunity (IEIs)
- Educating patients and families on the potential benefits, risks, and safety plans of therapies
- Managing intravenous access, including potential complications associated with intravascular access devices
- Mechanisms of action, indications (including emerging), contraindications, methods of delivery, pharmacology, and therapeutic rationale for immunological therapies such as:
  - allergen-specific immunotherapy
  - cytokines
  - immunisations, including the role of adjuvants in modifying the immune response
  - immunoglobulin replacement
  - immunosuppressive and immunomodulatory drugs
  - plasmapheresis
  - recombinant protein-based therapies
  - soluble receptors
  - therapeutic monoclonal antibodies
- Preventing predictable adverse events of immunosuppressive therapy, including opportunistic infections and glucocorticoid-induced osteoporosis

KEY PRESENTATIONS AND CONDITIONS

Advanced Trainees will have a comprehensive depth of knowledge of these presentations and conditions.

Presentations

- Complex or multisystem with associated:
  - allergy
  - autoimmunity
  - bone marrow failure and/or malignancies
  - infection
- Inadequate or non-response to vaccinations
- Infections:
  - associated developmental or syndromic features due to inborn errors of immunity (IEIs)
  - recurrent, with low virulence or opportunistic organisms, difficult to treat, or atypical infection
- Macrophage activation and related conditions

Conditions

- Acquired / Secondary immunodeficiency:
  - human immunodeficiency virus (HIV)
  - hyposplenism or splenectomy
  - immunosuppressive therapies
  - malignancy and related therapies
  - nutrition and metabolic disorders, such as type 2 diabetes
  - phenocopies, including:
    - anticytokine antibodies
    - somatic mutations
  - post-solid organ or stem cell transplantation
  - protein-losing conditions
  - thymoma (Good syndrome)
- IEIs / Primary immunodeficiency diseases (PIDs):
  - complement disorders:
    - C1 esterase inhibitor deficiency
  - immune deficiencies of cellular and humoral immunity:

For each presentation and condition, Advanced Trainees will **know how to:**

Synthesise

- recognise the clinical presentation
- identify relevant epidemiology, prevalence, pathophysiology, and clinical science
- take a comprehensive clinical history
- conduct an appropriate examination
- establish a differential diagnosis
- plan and arrange appropriate investigations
- consider the impact of illness and disease on patients[16] and their quality of life when developing a management plan

Manage

- provide evidence-based management
- prescribe therapies tailored to patients' needs and conditions
- recognise potential complications of disease and its management, and initiate preventative strategies
- involve multidisciplinary teams

Consider other factors

- identify individual and social factors and the impact of these on diagnosis and management

[16] References to patients in the remainder of this document may include their families, whānau, and/or carers.

		o combined immunodeficiency (CID) o T-B- severe combined immune deficiency (SCID) o T-B+ SCID » immune dysregulation diseases: o haemophagocytic lymphohistiocytosis (HLH) o immune dysregulation, polyendocrinopathy, enteropathy, X-linked (IPEX) syndrome » phagocyte number or function defects: o defects of respiratory burst, such as chronic granulomatous disease » predominantly humoral deficiencies: o common variable immunodeficiency (CVID) o isotype / light chain and functional (specific) antibody deficiencies o low IgG / IgA with normal / high immunoglobulin M and normal B cells, including selective immunoglobulin A deficiency o x-linked agammaglobulinanemia (XLA)
	AIM	• Secondary causes: » phenocopies, including: o anticytokine antibodies o somatic mutations
	PCH	• Diseases of immune dysregulation • Familial haemophagocytic lymphohistiocytosis syndromes
LESS COMMON OR MORE COMPLEX PRESENTATIONS AND CONDITIONS Advanced Trainees will understand these presentations and conditions. Advanced Trainees will understand the resources that should be used to help manage patients		**IEIs / PIDs** • IEIs / PIDs including, but not limited to: » complement deficiencies » epidermodysplasia verruciformis (human papillomavirus infection) » herpes simplex encephalitis, such as toll-like receptors 3 (TLR) defect » immune dysregulation diseases:

with these presentations and conditions.	o autoimmune lymphoproliferative syndrome (ALPS) o autoimmunity with or without lymphoproliferation o immune dysregulation with colitis o regulatory T cell defects o susceptibility to Epstein–Barr virus and lymphoproliferative conditions » intrinsic and innate immunity defects » Mendelian susceptibility to mycobacterial disease (MSMD) » other IEI due to non-haemopoietic tissues or leucocytes » phagocyte number or function defects: o congential neutropenias o defects of motility o other non-lymphoid defects » phenotypes: o moderate, such as: ▪ activator of transcription 1 (STAT1) loss-of-function (LOF) ▪ signal transducer o severe, such as: ▪ interferon gamma receptor 1 (IFNGR1) deficiency » predisposition to mucocutaneous candidiasis, such as STAT1 gain-of-function (GOF) » predisposition to severe viral infection, such as STAT1 deficiency » toll-like receptor signalling pathway deficiencies with bacterial susceptibility, such as: o interleukin-1 receptor-associated kinase 4 (IRAK4) o myeloid differentiation primary response protein (MyD88) deficiency	

EPIDEMIOLOGY, PATHOPHYSIOLOGY, AND CLINICAL SCIENCES

Advanced Trainees will have a comprehensive depth of knowledge of the principles of the foundational sciences.

- Intravenous and subcutaneous immunoglobulin preparations available, and their:
  - » composition
  - » pharmacokinetics
  - » safety considerations
- Pathogenesis of immunodeficiency in other acquired immunodeficiencies
- Pathogenic mechanisms underlying immunodeficiency disease states, such as:
  - » factors influencing genotype-phenotype correlations in PID
  - » pathogenesis of immunodeficiency in HIV infection:
    - o role of clusters of differentiation 4 (CD4) T cell as a correlate of immunodeficiency and role in monitoring
    - o spectrum of opportunistic pathogens and malignancies in untreated HIV infection

INVESTIGATIONS, PROCEDURES, AND CLINICAL ASSESSMENT TOOLS

Advanced Trainees will know the scientific foundation of each investigation and procedure, including relevant anatomy and physiology. They will be able to interpret the reported results of each investigation or procedure.

Advanced Trainees will know how to explain the investigation or procedure to patients, families, and carers, and be able to explain procedural risk and obtain informed consent where applicable.

Investigations

- Albumin, full blood count, globulins, and serum protein
- Complement assays:
  - » antibody, C1 / C3 / C4 esterase inhibitor, and C1q levels
  - » functional C1 inhibitor
  - » mannose-binding lectin (MBL)
  - » normal total haemolytic complement (CH50) absent complement alternative pathway (AH50)
- Cytokine release assays, such as interferon gamma release assay (IGRA)
- Cytotoxicity assays
- IgG subclasses
- Immune pathway function assessment, such as:
  - » activator of transcription (STAT5)
  - » signal transducer
- Immunisation with polysaccharide and protein vaccines to assess T cell independent and dependant antigen-specific responses
- Lymphocyte and neutrophil function assays
- Lymphocyte B and T subset enumeration, and memory B cell immunophenotyping
- Molecular diagnostics:
  - » assessment of likely pathogenicity of genetic variance
  - » clinical utility of different methods of genetic analysis, such as candidate gene sequencing versus whole exome or whole genome sequencing, on patient care and consent process
  - » understand the clinical impact and definition of variants of uncertain significance (VOUS)
- Recall antigen- or vaccine-specific serology
- Serum immunoglobulins – IgG A / E / M
- Understanding the role and indications for genetic testing

IMPORTANT SPECIFIC ISSUES

Advanced Trainees will identify important specialty-specific issues and the impact of these on diagnosis and management and integrate these into care.

- Age- and ethnicity-related differences in reference ranges in relevant biomarkers, such as serum immunoglobulins
- PIDs:
  - » age-related differences in infection susceptibility, including the impact of transplacental immunoglobulin transfer and the effect of ageing on the immune system
  - » appropriate and inappropriate vaccines according to PID advice, regarding benefits and risks, and prescribe reconstructive therapy as indicated
  - » appropriate patient education, governance, and stewardship prior

to and during treatment with immunoglobulin replacement therapy, including differences between subcutaneous and intravenous administration
  - » discussion with patients regarding the role of genetic diagnosis and informed consent, particularly regarding other potentially affected family members
  - » early detection of infections and neoplasia
  - » maintain knowledge on newly described conditions
  - » provide support and enhanced communication with transfer clinical teams
    in cases of transition from paediatric to adult immunology
  - » support organisations available for patients with PID
  - » use of prophylactic antibiotics and replacement immunoglobulin

PCH

- Transient hypogammaglobulinemia of infancy, and primary immunodeficiency of childhood

KEY PRESENTATIONS AND CONDITIONS

Advanced Trainees will have a comprehensive depth of knowledge of these presentations and conditions.

Presentations
Presentations may not be specific to a particular organ or system, so undifferentiated illness should be assessed for immune pathology.

Conditions – organ-specific or organ-limited autoimmune diseases (as part of multidisciplinary team)

- Cutaneous disorders:
  - » autoimmune bullous skin disorders:
    - o epidermolysis bullosa acquisita
    - o linear immunoglobulin A dermatosis
    - o pemphigoid:
      - ▪ bullous
      - ▪ cicatricial
      - ▪ gestationis
    - o pemphigus:
      - ▪ foliaceus
      - ▪ paraneoplastic
      - ▪ vulgaris
  - » autoimmune panniculitis
  - » dermatitis herpetiformis
  - » lupus
  - » primary Raynaud's phenomenon
  - » vitiligo
- Neuroimmunological disorders:
  - » autoimmune encephalitis associated with neuronal surface autoantibodies:
    - o anti-NMDA receptor encephalitis
    - o leucine-rich glioma-inactivated 1 antibody (LGI1-Ab)
    - o myelin oligodendrocyte glycoprotein antibody disease (MOGAD) / myelin oligodendrocyte glycoprotein antibody-associated encephalomyelitis (MOG-EM)
  - » neuromyelitis optica spectrum disorders (NMOSD)
  - » optic neuritis

For each presentation and condition, Advanced Trainees will **know how to:**

Synthesise

- » recognise the clinical presentation
- » identify relevant epidemiology, prevalence, pathophysiology, and clinical science
- » take a comprehensive clinical history
- » conduct an appropriate examination
- » establish a differential diagnosis
- » plan and arrange appropriate investigations
- » consider the impact of illness and disease on patients[17] and their quality of life when developing a management plan

Manage

- » provide evidence-based management
- » prescribe therapies tailored to patients' needs and conditions
- » recognise potential complications of disease and its management, and initiate preventative strategies
- » involve multidisciplinary teams

Consider other factors

- » identify individual and social factors and the impact of these on diagnosis and management

[17] References to patients in the remainder of this document may include their families, whānau, and/or carers.

Conditions – systemic autoimmune diseases

- Anti-phospholipid antibody syndromes:
  - » primary
  - » secondary
- Autoimmune inflammatory myositis:
  - » anti-synthetase syndrome
  - » dermatomyositis
  - » necrotising autoimmune myositis:
    - o anti-signal recognition particle-associated myositis
    - o hydroxymethylglutaryl-CoA reductase antibody-associated
  - » non-specific / overlap myositis
  - » polymyositis
- Connective tissue diseases:
  - » mixed
  - » undifferentiated and overlap
- Lupus erythematosus, including:
  - » neonatal lupus syndrome
- Sclerosis:
  - » diffuse cutaneous variants
  - » limited variants, including:
    - o calcinosis
    - o esophageal dysfunction
    - o Raynaud's phenomenon
    - o sclerodactyly
    - o telangiectasias (CREST)
- Sjögren syndrome
- Vasculitis:
  - » large vessel:
    - o giant cell arteritis (GCA)
    - o Kawasaki syndrome
    - o Takayasu arteritis
  - » medium vessel:
    - o polyarteritis nodosa (PAN)
    - o primary central nervous system vasculitis
  - » small vessel:
    - o cryoglobulinaemic vasculitis
    - o eosinophillic granulomatosis with polyangiitis (EGPA)
    - o Goodpasture (anti-GBM) syndrome
    - o granulomatosis with polyangiitis (GPA)
    - o Henoch–Schönlein purpura
    - o leukocytoclastic and lymphocytic vasculitis confined to the skin
    - o microscopic polyangiitis (MPA)

Conditions – systemic or organ-limited inflammatory / autoinflammatory disorders

- Acute febrile neutrophilic dermatoses (Sweet syndrome)
- Beçhet disease
- Corneal melt
- Erythema nodosum
- Eye disorders
- Immunoglobulin G4-related sclerosing disease
- Monogenic autoinflammatory disorders:
  - » Aicardi–Goutières syndrome
  - » chronic infantile neurological, cutaneous and articular syndrome / neonatal onset multisystem inflammatory disease syndrome
  - » chronic recurrent multifocal osteomyelitis
  - » cyclical neutropenia
  - » familial Mediterranean fever
  - » hyper-immunoglobulin D syndrome
  - » monogenic familial chillblain lupus
  - » Muckle–Wells syndrome
  - » non-infectious uveitis, including retinal vasculitis with or without systemic autoimmune disease
  - » periodic fever with aphthous stomatitis, pharyngitis, and adenitis syndrome
  - » related interferonopathies
  - » tumour necrosis alpha receptor associated periodic syndrome (TRAPS)
- Myopericarditis / Pericarditis
- Polymyalgia rheumatica
- Pyoderma granulomatosis
- Sarcoidosis
- Still disease

PCH

Conditions listed above are rare in paediatrics

LESS COMMON OR MORE COMPLEX PRESENTATIONS AND CONDITIONS

Advanced Trainees will understand these presentations and conditions.

Advanced Trainees will understand the resources that should be used to help manage patients with these presentations and conditions.

Conditions

- Rare syndromes associated with monoclonal or oligoclonal somatic mutation disorders with inflammatory manifestations:
  - Castleman disease / POEMS (polyneuropathy, organomegaly, endocrinopathy, myeloma protein, and skin changes) syndrome
  - Gleich syndrome
  - hypereosinophillic syndrome (HES)
  - idiopathic capillary leak syndrome (Clarkson disease)
  - Schnitzler syndrome
  - scleromyxedema
  - VEXAS (vacuoles, E1 ubiquitin conjugating enzyme, X-chromosome, autoinflammatory, somatic) syndrome

EPIDEMIOLOGY, PATHOPHYSIOLOGY, AND CLINICAL SCIENCES

Advanced Trainees will have a comprehensive depth of knowledge of the principles of the foundational sciences.

- Pathogenic mechanisms underlying autoimmune diseases and features
- Pathophysiology, including the cell biology and molecular basis of autoimmune diseases

INVESTIGATIONS, PROCEDURES, AND CLINICAL ASSESSMENT TOOLS

Advanced Trainees will know the scientific foundation of each investigation and procedure, including relevant anatomy and physiology. They will be able to interpret the reported results of each investigation or procedure.

Advanced Trainees will know how to explain the investigation or procedure to patients, families, and carers, and be able to explain procedural risk and obtain informed consent where applicable.

Immune-based therapies

- Immunomodulatory and immunosuppressive drugs, including:
  - azathioprine
  - calcineurin inhibitors
  - corticosteroids:
    - induction regimens
    - maintenance and weaning
    - management of adverse effects
  - cyclophosphamide
  - Janus kinase (JAK) inhibitors
  - leflunomide
  - methotrexate
  - mycophenolate
- Intravenous (IV) and subcutaneous immunoglobulin in replacement and immunomodulatory use
- Plasmapheresis
- Spectrum, including age-related issues
- Therapeutic monoclonal antibodies, cytokines, soluble receptors, and other biological agents used for the modulation of immune and inflammatory responses, such as:
  - anti-CD20 monoclonal antibodies
  - complement inhibitors
  - tumour necrosis factor-alpha / interleukin-1 antagonists

Investigations

- Antibodies associated with organ-specific autoimmune diseases, such as:
  - antiparietal cell antibodies
  - coeliac antibodies
- Antineutrophil cytoplasmic antibodies (ANCA)
- Antinuclear antibodies (ANA)
- Anti-citrullinated protein antibodies
- Anti-double-stranded deoxyribonucleic acid (dsDNA)
- Anti-phospholipid antibodies
- Cerebrospinal fluid (CSF) and serum antibodies in:
  - autoimmune encephalitis
  - myelin oligodendrocyte glycoprotein antibody disease (MOGAD)
  - neuromyelitis optica spectrum disorder (NMOSD)
- C-reactive protein (CRP)
- Cryoglobulins
- Erythrocyte sedimentation rate (ESR)
- Extractable nuclear antigen antibodies (ENA)
- Lung volumes and diffusing lung capacity output (DLCO)
- Myositis-associated / Myositis-specific antibodies
- Rheumatoid factor
- Schirmer test
- Serum:
  - angiotensin-converting enzyme (ACE)
  - complement
  - immunoglobulins and immunoglobulin G subclasses
- Uncomplicated skin biopsies
- Urinary sediment

IMPORTANT SPECIFIC ISSUES

Advanced Trainees will identify important specialty-specific issues and the impact of these on diagnosis and management and integrate these into care.

- Differentiate between diagnostic investigations and disease monitoring investigations
- Long-term clinical management
- Prevention of disease related to morbidity, such as cardiovascular disease, and relevant lifestyle modification
- Recognising disease remission
- Transitional care

Knowledge guide 4 – Allergy and hypersensitivity reactions

Advanced Training, Immunology and Allergy

KEY PRESENTATIONS AND CONDITIONS

Advanced Trainees will have a comprehensive depth of knowledge of these presentations and conditions.

Presentations

- Airway symptoms:
  - » lower, such as:
    - o dyspnoea
    - o wheezing
  - » upper, such as:
    - o cough
    - o dysphonia
    - o stridor
- Anaphylaxis
- Angioedema
- Arrest:
  - » cardiac
  - » respiratory
- Gastrointestinal (GI) symptoms, such as nausea / vomiting
- Hepatitis
- Nephritis
- Pericarditis
- Presyncope
- Rash:
  - » non-urticarial rash
  - » urticaria:
    - o acute
    - o chronic
- Systemic allergic reaction without anaphylaxis

Conditions

- Allergic rhinitis / sinusitis:
  - » allergic fungal rhinosinusitis
  - » allergic versus non-allergic
  - » chronic rhinosinusitis with nasal polyposis
- Asthma:
  - » allergic versus non-allergic
  - » thunderstorm
- Atopic dermatitis / eczema
- Contact dermatitis:
  - » irritant, such as excessive hand washing
  - » phytophotodermatitis, including toxic reactions such as Margarita syndrome
- Drug allergies:
  - » type I-IV drug allergies

For each presentation and condition, Advanced Trainees will **know how to:**

Synthesise

- » recognise the clinical presentation
- » identify relevant epidemiology, prevalence, pathophysiology, and clinical science
- » take a comprehensive clinical history
- » conduct an appropriate examination
- » establish a differential diagnosis
- » plan and arrange appropriate investigations
- » consider the impact of illness and disease on patients[18] and their quality of life when developing a management plan

Manage

- » provide evidence-based management
- » prescribe therapies tailored to patients' needs and conditions
- » recognise potential complications of disease and its management, and initiate preventative strategies
- » involve multidisciplinary teams

Consider other factors

- » identify individual and social factors and the impact of these on diagnosis and management

[18] References to patients in the remainder of this document may include their families, whānau, and/or carers.

- Food allergy and other adverse reactions to food, including:
  - » food-dependent exercise-induced anaphylaxis, such as:
    - o wheat dependant exercise-induced anaphylaxis
  - » immunoglobulin E (IgE)-mediated reactions to food allergens:
    - o cross-sensitisation between phylogenetically related foods, such as:
      - ▪ cashew / pistachio
      - ▪ pecan / walnut
    - o heat-labile versus heat-stable allergens, such as egg
    - o hidden allergens and cofactors
  - » insect-food cross-sensitisation syndromes, such as:
    - o crustacean / house dust mite allergy
    - o oral mite anaphylaxis syndrome
    - o tick bite / mammalian meat allergy
  - » non-IgE-mediated food-associated syndromes:
    - o delayed cow's milk allergy (food protein-induced allergic proctocolitis and enteropathy)
    - o eosinophilic GI disorders, such as eosinophilic oesophagitis
    - o food protein-induced enterocolitis syndrome (FPIES)
    - o other food intolerances, such as:
      - ▪ food chemical additive intolerance
  - » pollen-food oral allergy syndrome
- Inducible laryngeal obstruction / Vocal cord dysfunction
- Insect allergy:
  - » IgE-mediated reactions, such as:
    - o tick-bite anaphylaxis
    - o venom:
      - ▪ ant
      - ▪ bee
      - ▪ wasp
  - » localised reactions – small and large
  - » serum sickness

- Ocular hypersensitivity:
  - » conjunctivitis:
    - o allergic
    - o keratoconjunctivitis:
      - ▪ atopic
      - ▪ vernal
- Urticaria and angioedema:
  - » urticaria with or without angioedema:
    - o acute
    - o chronic spontaneous urticaria
    - o isolated angioedema – acute, recurrent, or persistent:
      - ▪ drug-induced
      - ▪ hereditary angioedema, such as type I, II, III, and new emerging forms
      - ▪ idiopathic angioedema
      - ▪ orofacial granulomatosis
    - o physical urticarias:
      - ▪ aquagenic
      - ▪ cholinergic
      - ▪ cold-induced
      - ▪ delayed pressure-induced
      - ▪ dermographism
      - ▪ exercise-induced
      - ▪ pressure-induced
      - ▪ solar
      - ▪ vibration-induced
- Vaccine hypersensitivity reactions

LESS COMMON OR MORE COMPLEX PRESENTATIONS AND CONDITIONS

Advanced Trainees will understand these presentations and conditions.

Advanced Trainees will understand the resources that should be used to with these presentations and conditions.

Mast cell disorders

- Hereditary alpha tryptasemia
- Mast cell activation syndrome:
  - » biopsychosocial context
  - » published diagnostic criteria
- Mastocytosis (multidisciplinary care with haematologist and dermatologist):
  - » cutaneous, including:
    - o diffuse, including:
      - ▪ telangiectasia macularis eruptiva perstans (TMEP)
    - o urticaria pigmentosa
  - » systemic – diagnostic criteria:
    - o aggressive
    - o indolent
    - o mast cell leukemia
    - o mast cell sarcoma
    - o smouldering
    - o with associated haematological malignancy, such as myelodysplasia or chronic myelomonocytic leukaemia (CMML)

EPIDEMIOLOGY, PATHOPHYSIOLOGY, AND CLINICAL SCIENCES

Advanced Trainees will have a comprehensive depth of knowledge of the principles of the foundational sciences.

- Clinical utility of component allergen testing, such as that it may help resolve cross-reactive carbohydrate reactivity in multiple positive venom sslgE testing
- Component allergens and risk stratification of anaphylaxis
- Geographic distribution of relevant insects, such as:
  - ants
  - certain flies
  - ticks
- Insect venom and bite allergy, such as hymenoptera and tick
- Physicochemical features:
  - carbohydrates – galactose α-1,3-galactose
  - nomenclature of allergens, such as the first three letters of genus, first letter of species, and numerical assignment based on order of discovery (such as Der p10 – dermatophagoides pteronyssinus tropomyosin)
  - proteins, often with repeating structures and different structural stability with heating

Anaphylaxis

- Cofactor relevance to each patient
- Contraindications, indications, precautions required, and risks:
  - benefits / risks of immunotherapy for anaphylaxis, such as insect venoms, and emerging food protocols for particular demographics
  - tests to identify triggers and cofactors involved in anaphylaxis
- Differential diagnoses of recurrent anaphylaxis
- Pathophysiology of acute systemic mast cell-mediated medical emergency, including acute lung pathology and cardiovascular consequences, in addition to mechanisms of mast cell activation

Angioedema and urticaria

- Different endotypes of chronic spontaneous urticaria, and appreciation of endotype impact on treatment response
- Differential diagnosis of acute and chronic urticaria

Atopic dematitis / eczema

- Complications
- Differential diagnoses and mimics
- Full spectrum of clinical presentations, including contribution of cofactors

Drug allergy

- Assessment of cross-reactive drugs
- Assessment of penicillin allergy, especially considering de-labelling penicillin allergy in the low-risk population
- Contraindications, indications, interpretation and the role of drug skin tests in investigations of drug hypersensitivity
- Diagnosis of delayed-type hypersensitivity reactions, including severe cutaneous adverse reactions (SCAR), such as:
  - acute generalized exanthematous pustulosis
  - drug reaction with eosinophilia and systemic symptoms
  - Stevens–Johnson syndrome
  - toxic epidermal necrolysis
- Differences between hypersensitivity and intolerance
- Mechanisms of drug hypersensitivity:
  - altered peptide repertoire
  - hapten mechanism
  - p-i concept
- Severe adverse drug reactions, including use and interpretation of intradermal, skin patch, skin prick, and *in vitro* testing for various type IV hypersensitivities
- Type 1 adverse reactions to drugs

Food allergy

- Avoidance measures in the management of eosinophilic GI diseases
- Clinical presentation and natural history of intolerances to additives, foods, lactose, and other substances
- Community and legislative matters
- Concepts of food science as applicable to food allergies and intolerances
- Distinguish between hypersensitivity and intolerance
- Education regarding current theories of food allergy sensitisation pathways
- Indications, modes of delivery, preparations, and potential adverse effects of pharmacotherapies for eosinophilic GI diseases
- Natural history of food allergy (from infant to adulthood) relating to persistent food allergy, and encompassing primary versus secondary allergies
- Potential cross-reactivity with non-food allergens
- Role of microbiome / meta-metabolome in food allergy

Rhinitis

- Consideration of severity and awareness of geographical variation of triggers, such as pollen distribution in Australia
- Different phenotypes / endotypes, and epidemiology
- Differential diagnoses of allergic versus non-allergic rhinitis / sinusitis
- Inflammatory changes in chronic rhinosinusitis, with and without nasal polyposis
- Sinonasal anatomy, and changes associated with allergic or eosinophilic inflammation
- Surgical therapies of the nasal airway

Occupational allergens

- Management of occupational allergens, such as latex

PCH

- Basis of infant nutrition and feeding-related immune adaptation, including the role of breastfeeding and hypo-allergenic formulae

INVESTIGATIONS, PROCEDURES, AND CLINICAL ASSESSMENT TOOLS

Advanced Trainees will know the scientific foundation of each investigation and procedure, including relevant anatomy and physiology. They will be able to interpret the reported results of each investigation or procedure.

Advanced Trainees will know how to explain the investigation or procedure to patients, families, and carers, and be able to explain procedural risk and obtain informed consent where applicable.

Drug allergy

- Assess cross-reactivity between drugs
- Challenge procedures when indicated using established protocols
- Drug desensitisation

Investigations

- Assays:
  - » C1 esterase inhibitor – quantitative and functional
  - » different platforms for serum specific IgE testing, previously known as radioallergosorbent test (RAST):
    - o component resolved testing, such as arachis hypogaea 2 (Ara-H2), and appraisal of evidence around clinical utility of these more expensive tests
    - o performance of assay for each allergen differs, including:
      - laboratory versus clinical context
      - screening versus diagnostic intent
      - utility of total IgE
- False negatives and positives, likelihood ratios, positive and negative predictive values, pre-test probability, sensitivity, and specificity, and incorporate these into routine practice
- Serum mast cell tryptase
- Skin biopsy

- Skin prick testing and intradermal testing (for medications, if appropriate):
  - » interpretation
  - » safety
  - » quality
- Spirometry

Procedures

- Adrenaline autoinjectors
- Drug tests:
  - » drug challenges
  - » intradermal testing
  - » patch tests
  - » skin prick testing
- Food challenges:
  - » double blind
  - » open
  - » single
- Specific allergen immunotherapy:
  - » oral
  - » subcutaneous
  - » sublingual
- Systemic mast cell disease:
  - » emerging therapies
  - » symptomatic therapy
  - » systemic immune suppressive therapy, practice, and principles for:
    - o biologic agents
    - o conventional disease-modifying antirheumatic drugs (DMARDs)
- Venom immunotherapy

IMPORTANT SPECIFIC ISSUES

Advanced Trainees will identify important specialty-specific issues and the impact of these on diagnosis and management and integrate these into care.

Action / Management plans

- National best practice standards around the management of patients with allergy
- Reduction of risk of re-exposure through use of:
  - » alert systems
  - » education
  - » institution of allergen minimising environments
- Standardised action and management plans for anaphylaxis and/or allergic reactions, as per the Australasian Society of Clinical Immunology and Allergy
- Venom immunotherapy:
  - » anaphylaxis action plans, incorporating adrenaline autoinjectors when appropriate
  - » natural history of allergy to stinging insects without, during, and after venom immunotherapy

Anaphylaxis

- Co-factors / Exacerbators
- Drug metabolism, entomology, and food science as relevant to investigation of anaphylaxis
- Psychosocial aspects
- Refractory, rebound, and treatments beyond adrenaline
- Resources required to prevent and manage acute anaphylaxis in the community
- Risk factors, such as asthma, and education regarding risky situations

Angioedema and urticaria

- Adverse effects and efficacy of treatments for hereditary angioedema
- Dental management of patients with hereditary angioedema
- Hereditary angioedema when present in patients presenting with oedema

- Management plans to include:
  - » avoidance of exacerbating / precipitating factors
  - » pharmacotherapy:
    - o first line agents
    - o immunomodulatory strategies for refractory urticaria
    - o second line agents
- Peridental, perioperative, and obstetric management of patients with hereditary angioneurotic oedema
- Prescribing practice for Berinert and icatibant in Australia, and awareness of newer therapeutics

Asthma

- Assessment, management, and monitoring of patients:
  - » biologics
  - » immunotherapy

Atopic dermatitis / eczema

- Community resources available to patients with atopic dermatitis
- Comorbidities
- Contraindications, indications, and potential beneficial and adverse effects of medical therapies, such as:
  - » topical and systemic calcineurin inhibitors
  - » topical glucocorticoids
  - » other immunosuppressive strategies:
    - o indications and management practices for biologic agents, such as dupilumab
- Epidemiology of allergic disorders in childhood
- Immunological comorbidities, such as immune deficiency, that may exist in patients with atopic eczema
- Management plans, such as from the Australian Society of Clinical Immunology and Allergy

Food allergy

- Management of food allergy in the community, such as:
  - » action plans
  - » provision of adrenalin autoinjectors when appropriate
  - » school and travel plans

PCH

- Dietary restrictions while ensuring adequate nutrition, especially in infancy
- Efficacy of interventions to reduce the risk of the development of allergic disorders in children

EPIDEMIOLOGY, PATHOPHYSIOLOGY, AND CLINICAL SCIENCES

Advanced Trainees will have in-depth knowledge of the topics listed under each clinical sciences heading.

For the statistical and epidemiological concepts listed, trainees should be able to describe the underlying rationale, the indications for using one test or method over another, and the calculations required to generate descriptive statistics.

Transplantation immunology

- Haematopoietic stem cell transplant (HSCT):
  - » allogenic stem cell transplant (SCT) – principles of donor allocation, including immunological and non-immunological factors
  - » defects of immune function and immunologic reconstitution following HSCT
  - » predictors and immunologic mechanisms of stem cell non-engraftment
  - » predictors and mechanisms of graft-versus-host disease
  - » predictors and prophylaxis of post-transplant infection, including immune monitoring and vaccination
  - » risks of specific transplant-associated lymphoid malignancies
  - » standard immunological indications for allogeneic and autologous SCT
- Solid organ transplantation (SOT):
  - » common opportunistic infections in the post-transplant setting
  - » defects of immune function post-transplant
  - » diagnosis of post-transplant lymphoproliferative disorder
  - » monitoring and prophylaxis of post-transplant infection, including vaccination
  - » pathophysiology of hyperacute, acute, and chronic graft rejection
  - » predictors and immunologic mechanisms of allograft rejection – direct versus indirect allorecognition
  - » principles and typical agents used in allograft immunosuppression, and broad differences in specific organ allografts
  - » principles of donor allocation, including:
    - o ABO
    - o avoidance of donor-specific human leukocyte antigens (HLA) antibodies
    - o HLA matching

INVESTIGATIONS, PROCEDURES, AND CLINICAL ASSESSMENT TOOLS

Advanced Trainees will know the scientific foundation of each investigation and procedure, including relevant anatomy and physiology. They will be able to interpret the reported results of each investigation or procedure.

Advanced Trainees will know how to explain the investigation or procedure to patients[19], families, and carers, and be able to

- Indications for use of pooled immunoglobulin (intravenous immunoglobulin or subcutaneous immunoglobulin) in transplant recipients

[19] References to patients in the remainder of this document may include their families, whānau, and/or carers.

explain procedural risk and obtain informed consent where applicable.	
IMPORTANT SPECIFIC ISSUES Advanced Trainees will identify important specialty-specific issues and the impact of these on diagnosis, management and outcomes.	• Absolute contraindications to deceased solid organ donation • Australian and Aotearoa New Zealand national networks of umbilical cord blood banks and cord blood collection centres • Collaboration with associated specialities, including: » haematologists » infectious diseases physicians » treating transplant physicians • Immune-mediated reactions, such as immune reconstitution inflammatory syndrome • Recommendations for vaccination in transplant recipients: » post-transplant vaccinations and serological monitoring » pre-transplant vaccinations » vaccinations in B cell-depleting therapy • Role of DonateLife and Organ Donation New Zealand in deceased solid organ donation, including definition of cardiac death (DCD) and brain death (DBD), and relevant ethical issues • Roles of registries such as: » AusCord » CordBank (New Zealand) » Stem Cell Donors Australia » World Marrow Donor Association (WMDA)

CLINICAL SCIENCES

Advanced Trainees will describe the principles of the foundational sciences.

- Innate and adaptive immune responses to immunisations used in clinical practice, including:
  - » preventative immunisations against infectious diseases
  - » therapeutic immunisations against:
    - o allergic disorders
    - o malignant disorders
- Mechanisms of action and examples of different vaccine platforms / technologies:
  - » inactivated / non-live:
    - o messenger RNA (mRNA)
    - o subunit:
      - ▪ conjugate
      - ▪ polysaccharide
      - ▪ protein based
      - ▪ recombinant
    - o toxoid
    - o viral vector
    - o whole cell
  - » live attenuated
- Principle of prime-boost
- Types of vaccine delivery, such as:
  - » intradermal
  - » intramuscular (IM)
  - » oral
- Use of adjuvants to enhance immunogenicity
- Use of protein conjugation to T cell independent antigens to modify vaccine efficacy

ELIGIBILITY CONSIDERATIONS

Advanced Trainees will assess the patient's current condition and plan the next steps.

- Benefits, contraindications, indications, principles, and risks of immunisation for those with primary or secondary immunodeficiency
- Counsel patients and families regarding benefits and risks
- Current age-specific immunisation schedules, such as the Australian National Immunisation Program (NIP) schedule and additional state-based schedules in the general population
- Immunisation against infection and cancer in specific subpopulations, such as:
  - » Aboriginal and Torres Strait Islander peoples
  - » Māori
  - » pregnant people
  - » splenectomy patients
- Immunisation requirements before and after immunosuppression, such as after stem cell transplantation or prior to starting biologic therapy for rheumatoid arthritis
- Immunisation with polysaccharide and protein vaccines to assess immune competence
- Indications for immunisations for infectious diseases in high-risk individuals, such as employees of healthcare facilities and travellers to high prevalence countries
- Passive immunisation, including monoclonal antibodies and plasma-derived immunoglobulin, against infectious disease in risk groups / exposed patients
- Recognise immunisation benefits and risks

UNDERTAKING THERAPY Advanced Trainees will monitor the progress of patients during the therapy.	• Appropriate 'catch up' vaccine schedules • Immunisation against infectious agents in patients at increased risk of allergic reactions to vaccines • Management and types of adverse reactions to immunisations / vaccines
POST-THERAPY Advanced Trainees will know how to monitor and manage patients post-therapy.	• Planning of future immunisation • Vaccines that are required to be administered in special conditions specific for the relevant immunodeficiency or allergic condition
IMPORTANT SPECIFIC ISSUES Advanced Trainees will identify important specialty-specific issues and the impact of these on diagnosis, management and outcomes.	• Complexity of vaccine hesitancy, misinformation, and misunderstanding, such as measles and COVID-19 • Contraindications to live vaccines • Interpretation of vaccine-related serological testing • Management of patients with previous adverse or allergic reaction/s to a vaccination